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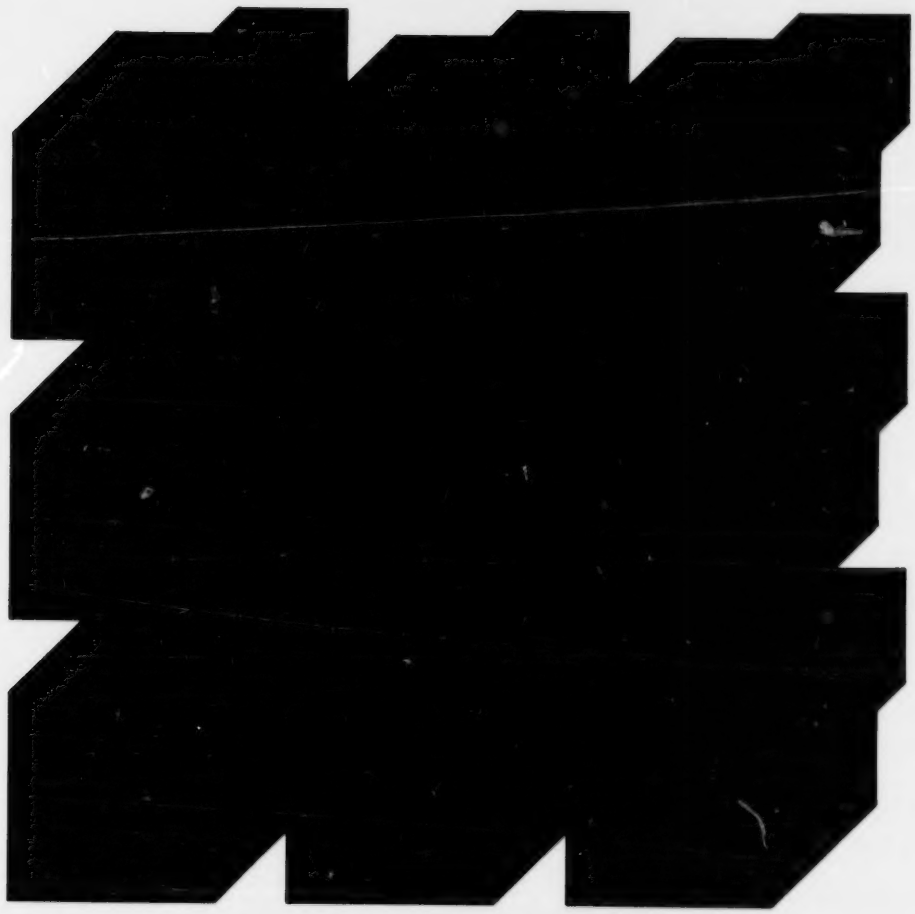

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DISCUSSION PAPER NO. 341

The Impacts of Trade Liberalisation on Imperfectly Competitive Industries: A Review of Theory and Evidence

by

Steven Globerman

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RÉSUME

Les discussions récentes entre le Canada et les Etats-Unis sur la libéralisation des échanges commerciaux ont attiré l'attention une fois de plus sur la question des gains économiques auxquels elle donnerait lieu. Bien que les économistes et les décideurs au pays se soient préoccupés de cette question depuis déjà fort longtemps, on ne s'entend pas sur l'importance (et même sur le sens) que ces gains possibles pourraient prendre. Le désaccord entre les spécialistes sur les avantages que le Canada pourrait tirer du libre-échange avec les Etats-Unis porte, entre autres, sur l'ampleur des économies d'échelle dont jouiraient les industries canadiennes affectées éventuellement par la libéralisation des échanges.

Une autre source plus récente de désaccord réside dans la possibilité que la libéralisation des échanges n'exerce que des effets minimes sur les prix intérieurs. En particulier, la concurrence imparfaite sur les marchés mondiaux de divers produits pourrait n'entraîner que des changements mineurs dans les prix intérieurs (et mondiaux), même si les obstacles transfrontaliers au commerce étaient réduits ou éliminés. Dans ce cas, l'important mécanisme susceptible de favoriser la rationalisation et la spécialisation de la production (à savoir la concurrence), et entraîner des gains d'efficience, serait mis en échec. Dans ces conditions, l'importance des avantages directs pour les consommateurs (par un meilleur accès à des produits importés moins dispendieux) et des gains indirects pour les consommateurs et les facteurs de production locaux (par l'entremise de taux de productivité plus élevés et d'une production réelle accrue au pays) devient équivoque.

L'objet du présent document consiste à examiner les arguments théoriques et les données empiriques concernant la réaction des d'entreprises imparfaitement concurrentielles à la libéralisation des échanges. Plus spécifiquement, les auteurs s'efforcent d'identifier et d'évaluer les conclusions de certaines recherches récentes à l'effet que la différenciation des produits et les niveaux élevés de concentration et de propriété étrangère des entreprises canadiennes contribuent à réduire considérablement les avantages escomptés, ou même à produire l'effet contraire.

La conclusion peut-être la plus importante de cette analyse est que les pressions concurrentielles associées à la libéralisation des échanges contribuent à une répartition plus efficiente des ressources au sein de l'économie canadienne. Les gains d'efficience ainsi obtenus sont de nature allocative aussi bien

que technique. Autrement dit, des prix à l'importation moins élevés (dans le cas des industries imparfaitement concurrentielles) entraînent une réduction de la perte de bien-être national pour les consommateurs, aussi bien qu'une réduction des coûts moyens de production par le biais de la rationalisation et d'une plus grande spécialisation de la production. Cela semble aussi s'appliquer aux industries qui sont partiellement protégées de la concurrence des importations par des barrières non tarifaires visant à réduire l'entrée de produits étrangers. Pour les industries susceptibles de devenir plus concurrentielles, il se produira généralement à l'échelle nationale un exode des producteurs inefficaces.

Il n'existe pratiquement aucun argument à l'appui de la thèse voulant que la libéralisation des échanges favorise une coordination oligopolistique et une concurrence réduite sur le plan des prix. En même temps, toutefois, l'analyse donne à penser que le processus de convergence des prix et des coûts d'un marché à l'autre pourrait être relativement lent et même problématique. Certaines caractéristiques structurelles, comme la possibilité de substitution entre les biens étrangers et locaux, influent sur le rythme auquel peut se faire l'adaptation à la libéralisation des échanges. Etant donné que ces caractéristiques diffèrent d'un marché à l'autre, le profil de cette adaptation variera également d'un marché à l'autre.

La possibilité de substitution entre les produits locaux et étrangers est un des facteurs importants du processus d'adaptation à la libéralisation des échanges. Manifestement, il est erroné de croire que la règle d'un seul prix pourra s'appliquer à la plupart des industries en cause; toutefois, les possibilités de substitution des produits varieront d'une industrie à l'autre selon une foule de facteurs, y compris les obstacles mis en place par les gouvernements, telles les normes sur les produits et les restrictions découlant des préférences accordées aux achats locaux. Il en résulte que le calibrage des modèles économétriques conçus pour évaluer les effets de la libéralisation des échanges devrait tenir compte de la possibilité de variations importantes, d'une industrie à l'autre, dans les paramètres d'élasticité des prix.

Sur le plan des politiques, les études disponibles ne permettent pas, dans leur ensemble, de mettre en doute les arguments traditionnels reposant sur la notion de bien-être à l'appui de la libéralisation des échanges; elles laissent clairement entendre, toutefois, que l'ampleur et la rapidité des effets varieront d'une industrie à l'autre. En outre, elles laissent croire que l'adoption de mesures visant à réduire les rigidités sur le marché intérieur aura pour effet d'accroître les avantages de

l'intégration économique internationale. Par exemple, les préférences formelles et officieuses accordées aux achats locaux réduiront sûrement les effets des stimulants à l'efficience engendrés par la libéralisation des échanges. Il est possible aussi, quoique cela soit moins évident, que les ententes formelles touchant la spécialisation et le partage des exportations affaiblissent ou même annulent les effets que les possibilités d'expansion des exportations sont susceptibles d'exercer sur la situation concurrentielle du marché. L'imposition de restrictions par les producteurs indépendants sur le recours à des agents de vente en aval, notamment par le biais d'arrangements de vente exclusive et d'autres restrictions du même genre, pourrait également réduire considérablement les pressions concurrentielles provenant des importations. Enfin, une politique de tolérance - ou même d'encouragement - des fusions et des acquisitions entre grandes entreprises pourrait amoindrir les gains d'efficience résultant de la libéralisation des échanges au point que - au-delà d'un certain seuil critique - les oligopoleurs non coopératifs auront tendance à adopter une stratégie de préservation de la rente à court terme.

Les auteurs proposent plusieurs domaines vers lesquels la recherche future pourrait s'orienter. Entre autres, il y aurait lieu d'étudier davantage les rapports entre la concurrence sur le plan des exportations et le comportement des oligopoleurs sur le marché intérieur. Il serait également souhaitable de mieux connaître les interrelations qui existent entre la différenciation des produits, la propriété étrangère et la concentration. A des fins de politique, il serait important de savoir s'il est possible de différencier les diverses caractéristiques des structures du marché et, le cas échéant, de déterminer quelles sont celles qui exercent une influence dominante sur le comportement des entreprises d'un pays. En troisième lieu, il faudrait s'intéresser de plus près aux causes de la substitution imparfaite entre les biens produits à l'étranger et ceux produits au pays. Dans la mesure où ces causes sont liées à l'intervention gouvernementale, il faudrait qu'une politique commerciale efficace soit intégrée à la politique intérieure concernant la concurrence. Enfin, les études pourraient porter sur une période de temps plus longue, afin d'identifier un certain nombre de répercussions moins évidentes de la libéralisation des échanges, y compris l'hétérogénéité des produits dont disposent les consommateurs et le rythme d'adoption des nouvelles technologies.

ABSTRACT

Bilateral discussions between Canada and the United States regarding liberalized trade have once again focused attention on the issue of economic gains from free trade. Notwithstanding a long-standing preoccupation with this issue on the part of both Canadian economists and policy-makers, the magnitude (and even the direction) of any such gains continue to be a subject of debate. In part, professional disagreement over available estimates of the gains to Canada from free trade with the United States is rooted in differences of opinion about the extent of economies of scale in Canadian industries likely to be affected by trade liberalization.

Another more recent source of disagreement about the likely gains to trade liberalization is the suggestion that domestic prices may not be significantly affected by trade liberalization, per se. In particular, imperfectly competitive world markets for different products may result in little change in domestic (and world) prices even if barriers to cross-border trade are reduced or eliminated. In this case, the critical mechanism promoting rationalization and specialization of production, (i.e., increased competition) with the concomitant efficiency gains, is thwarted. Under these conditions, the magnitude of both the direct gains to consumers (through increased access to lower cost imports) and the indirect gains to consumers and domestic factors of production (through higher domestic productivity levels and increased real output) become suspect.

The purpose of this discussion paper is to review available theoretical and empirical evidence concerning the response of imperfectly competitive firms to trade liberalization. In particular, we are concerned with identifying and evaluating the claims of recent research efforts that product differentiation, and high domestic levels of concentration and foreign ownership will substantially dampen -- or even reverse -- the expected gains from trade liberalization.

Perhaps the most important finding of the review of the evidence is that competitive pressures associated with trade liberalization contribute to a more efficient allocation of resources in the domestic economy. The resulting efficiency gains are of both an allocative and technical nature. That is, lower import prices (in imperfectly competitive industries) encourage both a reduction in the domestic welfare loss to consumers and a reduction in the average costs of production through production rationalization and increased product specialization. This appears to be true even in industries that are partially shielded from import competition

through non-tariff barriers erected to slow down the inflow of foreign products into the domestic market. In "workably competitive" industries, there is generally some exodus of inefficient producers from the domestic industry.

There is virtually no evidence supporting the empirical relevance of models that identify the potential for trade liberalization to encourage oligopolistic coordination and reduced price competition. At the same time, however, the evidence suggests that convergence of prices and costs across markets can be a relatively slow and problematic process. Specific structural characteristics, such as the substitutability between foreign and domestic goods, condition the speed at which adjustments to trade liberalization take place. Since these characteristics differ across markets, the dynamic profile of these adjustment will also vary across markets.

The substitutability between foreign and domestic goods is one important factor conditioning the adjustment process to trade liberalization. Clearly, assuming that a law-of-one-price will hold in the post-trade liberalization environment is inappropriate in almost all relevant cases; however, the degree of substitutability will vary across industries according to a number of factors including government imposed barriers such as product standards and restrictions on open-market purchasing associated with local purchasing preferences. An implication is that calibration of econometric trade models designed to evaluate the effects of trade liberalization should acknowledge the possibility that price elasticity parameters vary significantly across industries.

In terms of their policy implications, existing studies, taken as a whole, offer no strong basis to overturn the conventional welfare arguments for trade liberalization; however, they do offer a basis for anticipating that the magnitude and timing of the effects will vary across industries. Furthermore, they suggest that the benefits of international economic integration will be enhanced by policy measures designed to reduce rigidities within the domestic economy. For example, formal and informal local purchasing requirements will obviously mitigate the efficiency incentives created by trade liberalization. Less obviously, formal specialization and export sharing agreements may weaken or even offset the potential competitive effects of increased exporting opportunities. Restricted access on the part of independent producers to "downstream" selling agents, say through exclusive dealing arrangements and other formal and informal vertical restrictions, can also substantially blunt the competitive pressures of potential imports. Finally, a policy of open tolerance -- or even encouragement -- of mergers and acquisitions among large firms could dampen the efficiency

benefits of trade liberalization to the extent that (beyond some critical threshold) non-cooperative oligopolists will emphasize a strategy of short-run rent preservation.

Several directions for future research are suggested. One is the relationship between export competition and the behaviour of oligopolists in the domestic market. More can and should be known about this relationship. Another is the interrelationships between product differentiation, foreign ownership and concentration. For policy purposes, it is relevant to establish whether these various market structure characteristics are separable and, if so, which exert a dominant conditioning influence on the behaviour of domestic firms. A third suggestion is to focus more explicit attention on the causes of imperfect substitution between foreign and domestically produced goods. To the extent that the causes are associated with government policy, an effective trade policy should be integrated with domestic competition policy. Finally, studies could adopt a longer time horizon in order to identify some of the more subtle impacts of trade liberalization, including the heterogeneity of output available to domestic consumers and the speed of new technology adoptions.

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FOREWORD

The Council has undertaken a number of projects on the adjustment process. One of these -- Manufacturing Firm Adjustment -- addresses the issue of how firms, individuals and governments react, both separately and together, to changes in international competition. The results of the project are to be published in a Council Statement, Managing Adjustment: Policies for Trade-Sensitive Industries, in early 1988 with the accompanying Research Report slated for publication shortly thereafter.

One of the research questions that is of interest is the degree to which, when national markets are opened-up -- due to trade liberalization under the General Agreement on Tariffs and Trade or a U.S.-Canada Free Trade Agreement or a regulatory change such as the removal of entry controls in (say) telecommunications -- the expected benefits of trade are realized. These benefits include lower prices and increased efficiency.

It has been argued recently that in industries characterized by a small number of large producers the opening of markets may not lead to falling prices, etc. This Discussion Paper explores this issue by examining the theoretical underpinnings of such a view as well as the evidence concerning trade liberalization. In addition the paper explores other factors which may condition the rate at which the benefits of freer trade might be realized.

Steven Globerman has written widely on economic matters as well as Canadian public policy issues. He is currently professor in the Faculty of Business Administration at Simon Fraser University in British Columbia.

Judith Maxwell
Chairman

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I. INTRODUCTION

Bilateral discussions between Canada and the United States regarding liberalized trade have once again focused attention on the issue of economic gains from free trade. Notwithstanding a long-standing preoccupation with this issue on the part of both Canadian economists and policy-makers, the magnitude (and even the direction) of any such gains continue to be a subject of debate.[1] In part, professional disagreement over available estimates of the gains to Canada from free trade with the United States is rooted in differences of opinion about the extent of economies of scale in Canadian industries likely to be affected by trade liberalization. In particular, differences of opinion exist regarding the extent of product-specific economies of scale, which are suggested by some to be the critical scale-economy whose attainment would be promoted by trade liberalisation.[2]

Another more recent source of disagreement about the likely gains to trade liberalisation is the suggestion that domestic prices may not be significantly affected by trade liberalisation, per se. In particular, imperfectly competitive world markets for different products may result in little change in domestic (and world) prices even if barriers to cross-border trade are reduced or eliminated. In this case, the critical mechanism promoting, rationalization and specialization of production, (i.e. increased competition) with their concomitant efficiency gains, is thwarted. Under this circumstance, the magnitude of both the direct gains to consumers (through increased access to lower cost imports) and the indirect gains to consumers and domestic factors of production (through higher domestic productivity levels and

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[1]. See the papers in Canadian Public Policy, Vol. VIII Supplement, Special Number, October 1982. See, especially, P. Wonnacott and R.J. Wonnacott, "Free Trade Between the United States and Canada: Fifteen Years Later", and B.W. Wilkinson, "Canada - U.S. Free Trade and Some Options" in this volume.

[2]. A summary of much of the evidence surrounding the empirical relevance of product-specific economies of scale in Canadian manufacturing industries can be found in Donald J. Daly, "Rationalization and Specialization in Canadian Manufacturing" in D.G. McFetridge, ed., Canadian Industry in Transition, Toronto: University of Toronto Press, 1986.

increased real output) become suspect.[3]

The purpose of this discussion paper is to review available theoretical and empirical evidence concerning the response of imperfectly competitive firms to trade liberalisation. In particular, we are concerned with identifying and evaluating the claims of recent research efforts that product differentiation, and high domestic levels of concentration and foreign ownership will substantially dampen - or even reverse- the expected welfare gains from trade liberalisation.

Obviously, this is a fairly broad and potentially diffuse perspective. Hence, the Eastman-Stykolt (henceforth E-S) model will serve as a frame of reference around which the discussion will be centred. The E-S model has been (and continues to be) regarded as the standard analysis of the impact of the Canadian tariff on the structure and performance of Canada's manufacturing sector.[4] Notwithstanding a variety of criticisms of the model, the E-S model framework is essentially used in most policy

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[3]. In a number of recent studies, Cox and Harris report on the sensitivity of the economic effects of multilateral free trade to alternative assumptions about the pricing behaviour of domestic oligopolists. Their results confirm the extreme importance of the pro-competitive effects of tariff reductions in achieving production efficiency gains from trade liberalisation. See David Cox and Richard G. Harris, "A Quantitative Assessment of the Economic Impact on Canada of Sectoral Free Trade with the United States", Canadian Journal of Economics, Vol. XIX, No. 3, August 1986, pages 377-394, and David Cox and Richard Harris, "Trade Liberalization and Industrial Organization: Some Estimates for Canada", Journal of Political Economy, Vol. 93, Feb. 1985, pp.115-145.

[4]. The earliest and most complete exposition of the model is found in H.C. Eastman and S. Stykolt, The Tariff and Competition in Canada, Toronto: Macmillan of Canada, 1967. While the focus of the original Eastman-Stykolt model, along with much of the policy debate on free trade, has focused on tariffs, economists have recognized that non-tariff barriers are becoming increasingly important relative to tariff barriers. Although the impacts of various trade impediments are not identical, the conventional wisdom holds that reductions in each lead directionally to the same change in the behaviour and performance of domestic firms. Hence, for purposes of outlining the Eastman-Stykolt model and evaluations of the model, we will not distinguish between the generic categories of trade barriers. For some recent evidence on the evolving nature of trade protectionism, see Edward J. Ray and Howard P. Marvel, "The Pattern of Protection in the Industrialized World", The Review of Economics and Statistics, Vol. 66, No. 3, August 1984, pp.452-458.

analyses to infer the likely impacts of domestic tariff reductions. More specifically, the (usually implicit) assumption is made that the behavioural responses of domestic firms to a tariff reduction will be symmetrical- albeit in the opposite direction- to the imposition of tariff protection. The more recent literature dealing with trade and industrial organization has adopted a more explicit (and more critical) set of assumptions about the potential behavioural responses of imperfect competitors to changes in their external market structure. Hence, the E-S model can serve as a useful touchstone for a critical review and assessment of these recent contributions.

This discussion paper proceeds as follows: Section 2 provides a brief review of the E-S model along with its main empirical implications. Section 3 presents a review of empirical evidence bearing upon the relevance of the E-S model. Section 4 discusses a number of recent theoretical studies that explicitly focus on the potential behavioural responses of imperfectly competitive firms to trade liberalisation. Contrasts are drawn between the implications of the theoretical literature reviewed in this section to those of the E-S model. A number of empirical propositions are proposed to evaluate the relevance of the various hypotheses regarding the impact of trade liberalisation on the behaviour of oligopolists. Section 5 evaluates these propositions against the background of statistical and case study evidence. Section 6 provides additional evidence in the form of a detailed case study of the telecommunications industry. Finally, Section 7 offers an assessment of the policy implications of the theory and evidence reviewed in earlier sections.

II. THE E-S MODEL OF OLIGOPOLISTIC COMPETITION IN THE PRESENCE OF TRADE BARRIERS

The essential features of the E-S model are captured in Figure One. Domestic consumer demand (dd) is a fraction of the potential market available to efficient Canadian sellers. The demand curve facing Canadian firms is composed of three parts: 1. DA, which is the price at which foreigners can sell in Canada after paying tariff duties and transportation costs; 2. BD^1, which is the world price, at which efficient Canadian firms can sell all that it is profitable for them to produce; 3. AB, which is the relevant section of the domestic demand curve for domestic producers. It is the relevant section, since efficient domestic producers would presumably not accept any price less than BD^1 for sales in the Canadian market. The curve which is marginal to $DABD^1$ is $DAFGBD_1$.[5] The shapes and positions of the demand and

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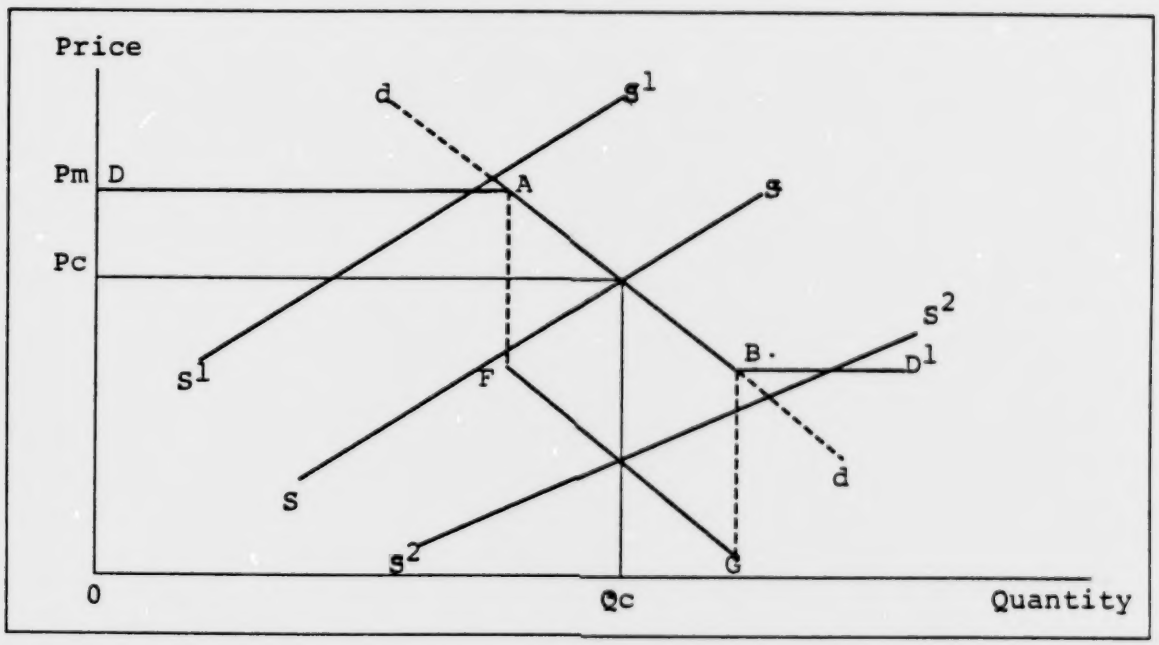
[5]. Figure 1 is taken from Christopher Green, Canadian Industrial Organization and Policy, Toronto: McGraw-Hill, Ryerson Ltd., 1980, p.79.

Figure 1

The Tariff, Cost Curves, and Industrial Pricing



marginal revenue curves over the ranges AB and FG, respectively, could depend upon the market power held by individual domestic firms. It is assumed here that domestic firms either set a coordinated industry price or that they all price along identical marginal cost curves. The important point to note in Figure 1 is the assumption that domestic firms face a large world industry supplying a close but imperfect substitute. Hence, the actions of domestic firms do not affect the prices set by foreign competing firms.

The effective price umbrella created by the presence of transportation costs and the domestic tariff will affect the profit maximizing strategy of domestic producers depending upon the cost structure of those producers and the nature of competitive rivalry within the domestic industry. For example, if the domestic supply curve SS is competitively determined, i.e. it is the aggregation of the marginal cost curves of domestic firms, who produce output as efficiently as possible, domestic output will be Qc and price will be Pc. If the foreign price net of the tariff is below Pc, the existence of the tariff encourages a substitution of less efficient domestic production for more efficient foreign production. A lowering of the tariff would presumably result in a displacement of domestic production by imports.

The more interesting case is when the domestic industry is imperfectly competitive. At one extreme, the domestic industry might function effectively as a cartel. If the marginal cost curve for the "cartel" falls anywhere within the range AF, the optimal pricing strategy for domestic producers is presumably to "limit price" up to Pm, the price at which imports (foreign supply) are attracted. Where the cost curve crosses the BG range, there are two points of intersection with the marginal revenue curve, and the one that will be chosen depends upon the position of the cost curve. For example, if S^2 crosses BG near B, a price AB will be charged. It might be noted that an assumption of upward sloping marginal cost curves is not necessarily inconsistent with an assumption of imperfect competition, although economies of scale are usually assumed in the relevant literature. Incorporating economies of scale as an explicit assumption would not change the basic E-S analysis. It would, of course, accentuate the partial equilibrium costs of tariff protection. The impact of economies of scale on the costs of protectionism has been dealt with extensively by a number of Canadian economists.

At the other extreme, the internal discipline of the domestic oligopolists may be so weak that the competitive output and price solution is attained, notwithstanding that the industry is imperfectly competitive. Given any degree of cartel effectiveness, the relevant constraint is the cost curve of the cartel. The market power of domestic producers is relevant to a

determination of where prices are set along the range AB. Outside this range, domestic producers are either price takers within the domestic market or in the export market.[6] There is no interaction between the price that domestic producers charge and the prices charged by foreign suppliers, in the sense that the price charged by foreign suppliers is not conditioned by the prices charged by domestic suppliers.

The E-S model therefore incorporates the potential interactions between domestic oligopolists, although it does not allow for any bilateral interaction between domestic and foreign oligopolists. The range of possible equilibrium outcomes under the E-S model is illustrated in the following quote:

> If product differentiation and marketing create barriers additional to those owing to the effect of market size,collusive pricing becomes more likely. Product competition becomes an alternative to price competition when products are heterogeneous, and the fear of new entrants is reduced by the barrier erected by differentiation.
>
> Where the barriers created by product differentiation and marketing are slight and the deterrent effect of economies of scale is small in relation to the inducement to entry offered by the Canadian tariff- that is, where the increase in cost incurred from operating a plant or firm of sub-optimal size is small in relation to the increase in price made possible by the Canadian tariff- the probable market structure is one in which several firms with average costs exceeding the minimum resort to non-price competition to sell differentiated products that are close substitutes.[7]
>
> In the contrasting case, it might be argued that product differentiation tends to keep out additions to capacity by new firms when it is a sufficiently strong barrier to entry. Established firms expand with the market and reach optimal size even if they were of sub-optimal size when established. Whether product differentiation and marketing barriers ever in fact erect a barrier as high as this becomes a question for empirical research.[8]

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[6]. If price discrimination is possible, domestic producers would charge a higher price in the domestic market than in foreign markets.

[7]. See Eastman and Stykolt, op. cit., p.26

[8]. Ibid., p.27.

> If the barrier is high owing to the small number of plants that can operate in the Canadian market, the plants are likely to be inefficiently small owing to the interdependence of the plants. Additions to capacity are impeded by nothing other than high costs, while they are attracted by the high prices that prevail owing to the wisely unaggressive behaviour of the competing units. The height of the over-all barrier is likely to predict well the height of the price fixed by an industry within the possibilities set by international trade and the tariff, but it is not likely to be completely related to the structure of the industry in terms of productive efficiency. The latter aspect of structure is more affected by the ratio of market size to the long-run average costs of units of production.[9]

A key feature of the E-S model is therefore mutual forebearance from price competition among domestic oligopolists. To the extent that competition takes place, it is primarily through product differentiation and the proliferation of less than minimum efficient scale plants. The consequence of this behaviour is "excessive" product diversification, high costs and low productivity.[10] It should be noted that there is no necessary presumption of explicit collusion among domestic firms. If each individual firm conjectures that its domestic rivals will quickly match any price reduction, its estimated price elasticity of demand could be quite low. Even with reductions in unit costs associated with increased specialization, the anticipated increase in profits may be too small to justify the risks associated with specializing and rationalizing production, and possibly initiating a price war through significant price reductions.

Implicit price collusion is arguably facilitated by having a "focal" pricing point, i.e. the duty-paid landed value of the imports (at the current exchange rate). However, the critical factor underlying mutual forebearance in the E-S model is presumably the conjecture made by individual firms that pricing responses by rivals will mitigate any competitive advantages gained by increased specialization and associated lower unit costs- which are, in turn, partially passed on to consumers. What is less clear is why any one firm would not make a credible commitment to lower costs and lower prices, e.g. by prebuilding additional capacity and booking advance orders at prices below those of other domestic rivals or by publicly commiting itself to better the price offered by any of its domestic rivals. A credible strategic commitment to "rationalization" on the part of

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9. Ibid. p.31.

10. D.J. Daly, op. cit., p.197.

one or a few domestic oligopolists could signal the futility of retaliatory actions by slower acting rivals. The latter would presumably do better to sell their production capacity to the commited rival rather than launch a price war to try to "reverse" the precommitment. An important issue with respect to the E-S model is, therefore, what mechanism prevents or mitigates individual firms from making strategic commitments to rationalizing production, if such a strategy would be profitable given that other firms' prices are taken as given.[11]

As Helpman and Krugman note, the theory of cooperative behaviour in oligopolistic industries is not well developed. However, the reality is that there is at least some cooperation. More generally, tacit cooperation to avoid price wars through price leadership and other coordinating devices is common.[12] This is implicitly the premise underlying policy interpretations of the E-S model. It is also the basis for extrapolating the presumptive effects of trade liberalization in the model. Specifically, where Canadian producers act as price takers in the world market, any lowering of the domestic tariff narrows the range of domestic supply prices within which Canadian producers can compete among themselves. This point is made quite simply with the aid of Figure 2. The domestic industry is presumed to be facing a perfectly elastic supply of imports. With a marginal cost, MC_1, and a world price inclusive of tariffs, P_w, the "cartel" will have to behave as a competitive firm producing OQ_1 (with imports Q_1Q_2). If the marginal cost is MC_2, the cartel is prevented from exploiting its full monopoly position. The best it can do is limit price up to P_w. With MC_3, the domestic industry can charge a higher price than the competitive industry; however, a reduction in the domestic tariff (to say P_{w1}) would impose the competitive solution on the low-cost cartel.[13]

Hence, where the "collusive" domestic price approximates the landed foreign price plus the domestic tariff, a reduction in the

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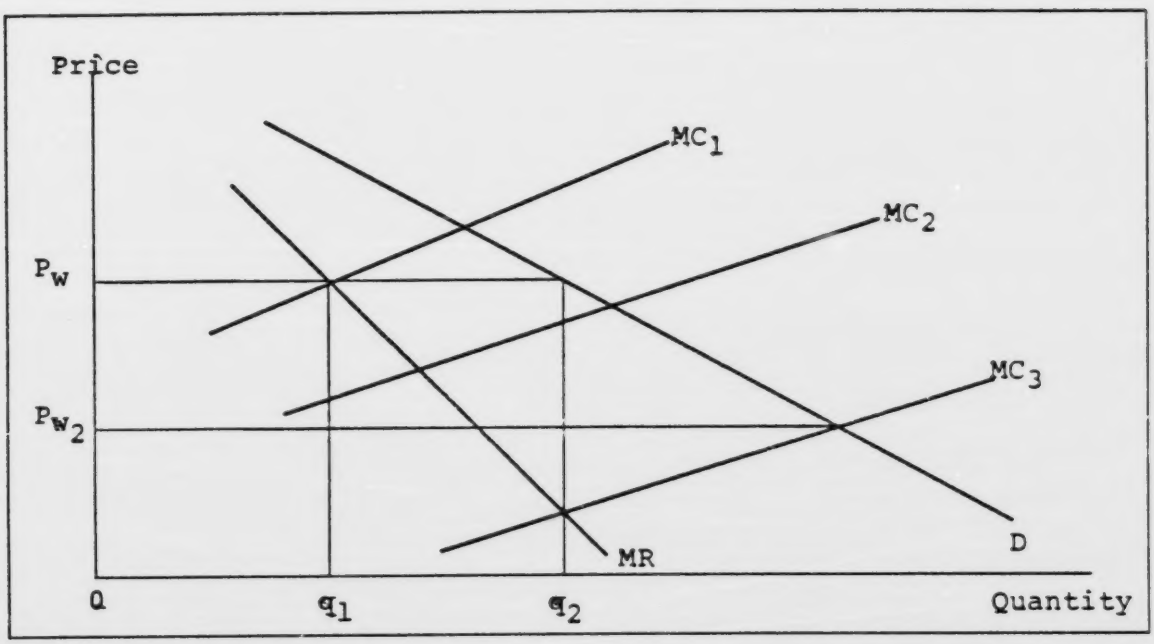
11. Much the same criticism is raised by Muller. He argues that the E-S model fails to explain why an aggressive entrant should not build a plant of minimum efficient scale and drive out his less efficient competitors. He also criticizes the model for failing to predict the circumstances under which extant firms will find it profitable to accept domestic entry. See R. Andrew Muller, "The Eastman - Stykolt Hypothesis Reconsidered", Canadian Journal of Economics, Vol.XV, No. 4, November 1982, pp.757-764.

12. See Elhanan Helpman and Paul Krugman, Market Structure and Foreign Trade, Cambridge: The MIT Press, 1985, p.34.

13. Figure 2 and the surrounding discussion is adapted from Alexis Jacquemin, "Imperfect Market Structure and International Trade: Some Recent Research", Kyklos, Vol. 35, 1982, pp.75-93.

Figure 2

Tariff Level and Domestic Pricing



domestic tariff will force a reduction in the domestic supply price, thereby obliging Canadian producers who were operating at inadequate scale (or who were excessively diversified) to improve the efficiency of their operations if they were to remain in existence. Those producers at an international comparative disadvantage would presumably disappear from the industry.[14] The reduction in domestic tariffs is therefore seen as a major policy instrument to encourage intra-industry rationalization in domestic oligopolies. Where domestic industries are competitive and where domestic producers are already operating at efficient scale, a reduction in domestic tariff levels will encourage a movement of resources out of the sector.

The E-S model focuses on the case where the foreign supply price net of the tariff is less than the domestic supply price; however, a case can be made that even where countries are completely symmetric with respect to production and demand conditions and have equal prices in autarky, trade liberalisation has the potential to increase competition and lower prices in imperfectly competitive industries. Under the assumption that non-cooperative firms take other firms' output as given (the Cournot assumption) and that all firms are identical, the basic equilibrium condition is: Marginal Revenue (MR) = Marginal Cost (MC) or

$$P(1 - 1/nE_p) = MC$$

where P is price, n is the number of firms and E_p is the elasticity of demand. The impact of trade is to increase the number of firms in both markets by eliminating market segmentation. In this case, MR would increase in each market for the individual firm. At the pretrade price, MR would therefore exceed MC because the elasticity of demand faced by the firm increases, so firms expand their output and price falls.[15] By increasing potential competition, the introduction of the possibility for trade has an effect on the pricing decisions of imperfect competitors, and output in the domestic industry expands. This procompetitive partial equilibrium effect of trade liberalisation has been the "conventional wisdom" of policy economists for some time.

III. EMPIRICAL EVIDENCE ON THE E-S MODEL

A number of empirical studies provide direct and indirect evaluations of the critical assumptions and deductions of the E-S model. One critical assumption is that internal and external competitive conditions interact to condition the competitive behaviour of domestic firms. In this regard, a variety of studies

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[14]. Eastman and Stykolt, op. cit., p.24.

[15]. Helpman and Krugman, op. cit., p.87.

support the result that the competitive discipline of imports is conditional upon potentially non-competitive conditions among domestic producers. For example, Bloch found that concentration in conjunction with high tariff barriers in Canadian manufacturing could be linked to higher domestic prices and higher costs, whereas each structural variable taken separately had no significant relationship to these performance measures.[16] Baldwin, Gorecki and McVey found that while tariffs per se, whether effective or nominal have no significant impact, the ratio of the size of larger plants in Canada to larger plants in the corresponding U.S. industry is smaller in industries with high tariffs and high concentration of ownership. Tariff declines in industries with high ownership concentration and high tariffs lead to increases in relative plant scale in such industries.[17]

In another Canadian study, Hazledine found that the effect of a given percentage tariff on domestic price increased with the level of concentration of the domestic industry. In relatively atomistic industries, tariffs had no perceptible effect on prices of domestically produced goods, whereas, in highly concentrated industries, there was full pricing up to the tariff.[18] In a similar vein, DeRosa and Goldstein found that price changes in four-digit U.S. manufacturing industries are negatively and significantly related to changes in import shares interacted with seller concentration.[19]

Evidence (discussed in a later section) also shows that profits as well as prices are affected by the competitive force of imports with a consensus that the larger are imports as a share of domestic sales, the smaller is the effect of concentration of domestic producers on the profits earned by

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16. See H. Bloch, "Prices, Costs and Profits in Canadian Manufacturing: The Influence of Tariffs and Concentration", Canadian Journal of Economics, Vol. 7, 1974, pp.594-610.

17. See J.R. Baldwin, P.K. Gorecki with J. McVey, "Canada-U.S. Productivity Differences in the Manufacturing Sector:1970-79" in D.G. McFetridge, ed., Canadian Industry in Transition, op. cit. Muller, op. cit. reviews a number of different Canadian studies that come to much the same conclusion. Specifically, none finds an independent effect of tariffs on scale efficiency._

18. See Tim Hazledine, "Testing Two Models of Pricing and Tariff Protection with Canada/United States Data", Journal of Industrial Economics, December 1980.

19. See D.A. DeRosa and M. Goldstein, "Import Discipline in the U.S. Manufacturing Sector", IMF Staff Papers, Vol. 28, 1981, pp.600-634.

those producers.[20] Similarly, a number of studies confirm the absence of an effect of imports in unconcentrated industries. And several simultaneous equations models confirm that non-competitive behaviour by domestic sellers will increase imports just as import competition will impair their market power.[21]

Taken as a whole, available studies suggest that declines in price are mirrored by declines in price-cost margins. They also provide indirect evidence that costs decline to the extent that cost decreases are associated with production rationalization and specialization. In the Canadian context, attention has been particularly focused on the impact of tariff reductions on product specialization. A first empirical examination of the relationship was made by Lermer who found that both exports and imports increased more rapidly than the value of manufacturing output in the period following the Kennedy Round tariff reductions.[22] As noted above, it has also been found that tariff declines in industries with high ownership concentration and high tariffs lead to increases in relative plant scale in such industries. For a given plant size in industries having high tariff and high concentration variables, product diversity is substantially higher than in plants of similar size elsewhere. Hence, holding product mix constant, an increase in plant size will lead to an increase in average length of production run. The greater the import penetration ratio, the higher the relative

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20. Bloch's study is an exception. He concludes that protected oligopolists dissipate above-average profits in inefficiencies of various sorts. See Bloch, op. cit.

21. For a comprehensive review of these studies, see Richard E. Caves, "International Trade and Industrial Organization: Problems Solved and Unsolved", European Economic Review, No. 28, 1985, pp.377-395.

22. See George Lermer, "Evidence From Trade Data Regarding the Rationalizing of Canadian Industry", Canadian Journal of Economics, Vol. 6, 1973, pp.248-256. For a sample of 38 developed and developing countries, Balassa also finds that intra-industry trade increases with the openness of national economies. See Bela Balassa, "Intra-Industry Specialization: A Cross-Country Analysis", European Economic Review, Vol. 30, February 1986, pp.27-42.

Canadian - U.S. efficiency in manufacturing.[23]

It should be noted that most studies, including the study by Baldwin and Gorecki, do not establish an explicit link between changes in import competition and changes in productivity. Furthermore, studies focusing on the impact of trade liberalisation on prices are hampered by the difficulties associated with constructing comparable price indexes of domestically and foreign produced commodities, while studies focusing on price-cost margins are hampered by difficulties in estimating marginal costs. Price-cost margins rarely properly include an appropriate measure of capital costs. The latter will likely vary both across industries and over time.

Notwithstanding the foregoing disclaimers, empirical studies bearing upon deductions from the E-S model have tended to provide support for the model's broad relevance. In particular, studies indicate that domestic market structure and foreign competition interact to determine the pricing behaviour of domestic oligopolists. Specifically, increased import penetration tends to be associated with price decreases in industries that are relatively highly concentrated; however, there is little relationship between tariff protection and prices in industries that are domestically competitive. This is an unambiguous deduction from the E-S model. It has also been generally found that price-cost margins in concentrated industries decline with reduced tariff protection. This is an expected result from the E-S model when entry into domestic oligopolies is relatively difficult for reasons of product differentiation, since (in this case) domestic firms will not dissipate all available quasi-rents (or above-average profits). However, where entry is limited only by the size of the domestic market, super-normal profit margins will be eliminated by excessive product differentiation taking place in plants of "too-small" size. In this latter case, tariff reductions will likely be associated with improved production efficiency in domestic oligopolies. This result has been identified in a number of Canadian empirical studies, although the precise nature of the efficiency gains is complex.

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[23]. See Baldwin, Gorecki with McVey, op. cit., pp.240-249. Using Statistics Canada data, Baldwin and Gorecki found that the combination of high tariffs and high concentration are related to shorter production runs. See John Baldwin and Paul Gorecki, Product Diversity and Length of Product Run in Canadian Manufacturing Industries: 1970 - 79, Discussion Paper 247, Economic Council of Canada, Ottawa, 1983.

A. Criticisms of the E-S Model

Notwithstanding this generally supportive evidence, the E-S model has been criticized on a number of empirical and theoretical grounds. One criticism is the assumption in the model that foreign and domestic products in a market are perfectly substitutable and that domestic sellers are price takers in import and export markets. To the extent that imports are not perfect substitutes for domestic products, the impact of lower tariffs on domestic prices will depend, among other things, on the cross-price elasticities of demand between foreign and domestic products. Where the cross-price elasticities are high, the basic deductions from the E-S model with respect to price seem appropriate; however, where the cross-price elasticities are low, the impact of freer trade on domestic price may be quite muted.[24] Several recent Canadian studies that identify an independent and statistically significant influence of domestic costs on prices cast some doubt on the general validity of assuming price-taking behaviour on the part of Canadian oligopolists. For example, Karikari examined changes in domestic Canadian manufacturers' prices in 57 industries over the periods 1970-75 and 1975-80. He found that U.S. prices mattered most in the first period (when the Canadian dollar was at par with the U.S. dollar), and domestic costs mattered more in the second period, during which time the Canadian dollar depreciated nearly 20%.[25] Hazledine and Wall, in their study of Canada/U.S. price differences for 230 commodities conclude that Canadian tariffs have raised the prices charged by Canadian manufacturers. But, in most industries, the increase in price is less than the amount of the tariff. Furthermore, the tariff-price effect became smaller between 1977 and 1982, possibly because of the 20% depreciation of the Canadian dollar relative to its trading partners over this period. Hazledine and Wall interprete their evidence, along with Karikari's evidence as suggesting that for some products, a price leadership model may be at work in which U.S. firms, and at other times, Canadian firms take the role of price leader.[26]

Other evidence has called into question the "law-of-one-price" assumption of the E-S model. For example, Baldwin, et.al. note that conventional measures of market structure (e.g.

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[24]. See Tim Hazledine and Robert Wall, "Pricing and the Tariff in Canadian Manufacturing Industries", University of British Columbia, Department of Agricultural Economics, mimeo, November 1986.

[25]. See John Karikari, "Competitiveness and Industry Pricing in Canadian Manufacturing Industries", Queen's University, Department of Economics, mimeo, August 1985.

[26]. Hazledine and Wall, op. cit., p.36.

concentration) often fail to perform as expected in models explaining differences in price-cost margins across industries. They suggest a possible reason is that these models (incorrectly) treat domestic production and imports as perfect substitutes.[27]

Studies for other countries also suggest that foreign and domestic goods are imperfect substitutes. For example, Williamson found that domestic producers' prices are more insulated from those of competing imports for simple goods that are heavily advertised and for complex goods that are promoted through sophisticated distribution channels.[28] Evidence also suggests that developing country producers encounter particular trouble exporting goods that ostensibly face product-differentiation entry barriers.[29]

The EEC experience with trade liberalisation offers additional evidence on the potential for foreign and domestically produced goods to be imperfect substitutes with important implications for gains from trade liberalisation. For example, Muller examined the experience of a number of industries, including white goods, cars and trucks, following the development of common markets within the EEC. He concludes, among other things, that even where cost differences between trading partners are very large (i.e. 10 - 25%) and are sometimes well above original tariff levels, it takes a long time (5 to 15 years) before the full benefits of trade and integration are realized. Muller's interpretation of the evidence is that "it is not just tariffs which hold back trade, but a whole variety of factors connected with the incompatibility of standards, distrust of foreign products, inertia, discriminatory commercial practices, all of which tie domestic customers to domestic producers. These factors can continue to isolate Community markets long after the removal of tariffs, with the important implication that the

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27. See John Baldwin, Paul Gorecki and John McVey, Imports, Secondary Output, Price-Cost Margins and Measures of Concentration: Evidence for Canada, 1979, Economic Council of Canada, Discussion Paper No. 263, May 1984.

28. See P.J. Williamson, Import Penetration in Imperfectly Competitive Markets: A Study of Firm and Industry Behavior Under Import Threat, Ph.D. dissertation, Harvard University, 1984. Also see R.E. Caves and P.J. Williamson, "What is Product Differentiation Really?", Journal of Industrial Economics, Vol. 34, December 1985, pp.113-132.

29. J.R. De la Torre, Jr., "Marketing Factors in Manufactured Exports From Developing Countries" in L.T. Wells, Jr., ed., The Product Life Cycle and International Trade, Boston, Mass.: Harvard Business School, Division of Research, 1972, pp.227-259.

international cost differences which drive the increased intra-Community trade, can be considerably greater than the pre-Community tariff."[30] Muller's conclusions for the EEC are consistent with Hazledine and Wall's previously cited findings for Canada.

In effect, the product-differentiation criticism of the E-S model qualifies the magnitude, if not the direction of the anticipated effects of trade liberalisation. A related criticism that can be levied at the E-S model is that it essentially ignores the potential role that foreign ownership plays in the adjustment of domestic firms to import competition. A substantial share of Canadian imports represent inter-affiliate shipments of multinational enterprises. It would probably too simple to conclude that these imports are non-competitive with domestically produced goods, since parent companies presumably wish to source long-run production from affiliates enjoying lowest costs. Nevertheless, extra-market considerations and organizational rigidities could lead to delays in price and output responses to trade liberalisation, particularly if tax differences across countries figure in production siting decisions of the parent. minimize the long-run costs of their overseas affiliates.

The impact of foreign ownership, per se, on the trade liberalisation process is often treated as being coextensive with the impact of imperfect competition, given that multinationality and concentrated ownership in an industry tend to go together. While their channels of influence are conceptually distinct, the two factors presumable interact with each other. Specifically, multinationality could potentially facilitate mutual forebearance against competing across international boundaries by increasing the number of "contact points" in which any given number of firms confront each other in the international marketplace; however, competitive market structures in domestic industries would obviate the relevance of this concern, since such mutual forebearance would not significantly reduce competitive pressures and, therefore, presumably would not be a paying proposition for the MNEs. On the other hand, it might be argued that multinationality, per se, enhances the competitive response of firms to changes in international competition. For example, the comparative cost information of MNEs may be better than the information available to national firms, thereby enabling the former to better anticipate the consequences of trade

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30. See Jurgen Muller, "Competitive Performance and Trade Within the EEC: Generalizations From Several Case Studies With Specific Reference to the West German Economy", Zeitschrift fur die gesamte Staatswissenschaft, 137, 3, 1981, pp.638-663.

liberalisation.[31] Furthermore, MNEs may be better able to rationalize production given that they already have facilities in a number of different countries and, therefore, may not have to engage in difficult and time-consuming arms-length contracting-out of production to foreign-based producers.

Survey results reported by Daly and MacCharles provide some suggestive evidence on the response of foreign-owned companies to trade liberalisation. The authors compared production diversification and export propensities between 1974 and 1979 between Canadian-owned and foreign-owned subsidiaries. The ratio of purchased materials to value-added, the extent of product specialization, and the ratio of exports to production all increased more dramatically in the Canadian-owned plants than in the subsidiaries. As a result, while the Canadian-controlled firms in 1974 were more diversified than the subsidiaries, by 1979 the difference between the firms on this dimension had narrowed appreciably. Indeed, between 1974 and 1979, a number of subsidiaries actually increased the range of products they produced.[32] An implication is that foreign-owned subsidiaries were either more shielded from Kennedy-Round tariff reductions than their domestically owned counterparts, and/or that decision-making rigidities are more pronounced in foreign affiliates of MNEs. As we shall discuss in a later section, other studies call into question the generality of the Daly-MacCharles findings.

The E-S model, along with many other discussions of the relationship between trade policy and domestic competition does not explicitly consider the potential for any relationship between reductions in foreign barriers to trade and domestic competition. In the E-S model, Canadian-based firms can export all they produce as long as they sell at the ruling price in the overseas market, presumably net of any tariffs. Lower tariffs in foreign markets therefore result in higher netbacks to Canadian suppliers.

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31. This argument is made in Lawrence Franko, "Adjusting the Export Thrusts of Newly Industrialising Countries: An Advance Country Perspective", The Economic Journal, Vol. 91, June 1981, pp.486-506. On the other hand, Franko suggests that the market power position of MNEs can allow corporate production location decisions to "damp" what could otherwise be abrupt and socially disruptive workings of the market. Unfortunately, he does not demonstrate the existence of such market power. Nor does he derive the conditions under which it would be in the MNE's interest to damp competitive forces.

32. See D.J. Daly and D.C. MacCharles, Canadian Manufactured Exports: Constraints And Opportunities, Montreal: The Institute For Research on Public Policy, 1986.

In fact, the relevant relationship is potentially more complex, as can be illustrated with reference to Figure 3. Given marginal cost MC_1 and a world price exclusive of the world tariff P_w, the competitive industry and the domestic monopolist will produce the same quantity, i.e. Oq_5. But the distribution of output will be different: if the monopolist can price discriminate, he will only sell Oq_1 at a price P_m to the domestic market and export q_1q_5 (as compared to q_3q_5 in the case of a competitive industry). Here the possibility of exporting increases the domestic misallocation of resources due to monopoly power. If the monopolist cannot discriminate, he will behave as a competitive industry, and exporting will constrain the domestic monopolist to adopt a competitive behaviour. However, for MC_2, the non-discriminating monopolist has a choice. He can either adopt the competitive output Oq_4 and export q_3q_4, or he might not export at all, producing only Oq_2 for the domestic market. The choice will depend on the relative magnitude of the producers' surplus that the domestic monopolist earns from his extra sales on the export market, and the monopoly rents originating from a sale restriction to the domestic market.[33]

Given these various possible outcomes, it is not surprising that empirical research leads to no clear consensus. Specifically, some studies show exporting and profitability to be inversely related. Others show them to be positively related. Ultimately, the potential for market segmentation arises from imperfect substitution between foreign and domestic goods. The foregoing complexities are essentially ignored by the E-S model, since the latter implicitly assumes a "law of one price". The model also effectively assumes that sellers believe other producers' quantity decisions will be independent of their own. This Cournot-type assumption can be called into question if domestic and foreign markets are imperfectly competitive. More specifically, recent theoretical studies (which we will review below) stress the strategic interactions that can take place between oligopoly producers in different markets and the reversals in traditional conclusions about the impacts of trade liberalisation that follow from such interactions.

Finally, the E-S model makes the fundamental assumption that trade policy is exogenous to the behaviour of domestic firms. That is, it assumes that domestic firms accept reductions in specific trade barriers as given to their decision-making and do not try to offset or mitigate these reductions through the political process. The model should not necessarily be faulted in this respect, since it was designed to explain the behaviour of domestic firms under given trade protection regimes and not the determinants of the regimes themselves. Nevertheless, observers

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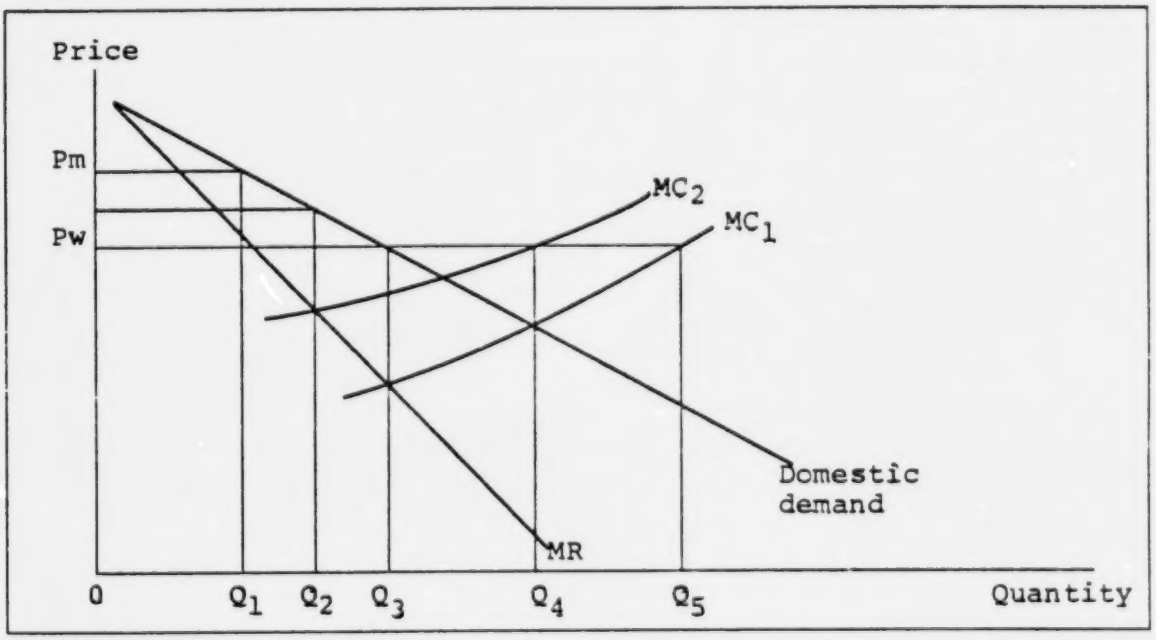
[33]. This discussion is drawn from Alexis Jacquemin, op. cit., pp.83-84.

Figure 3

Export Possibilities and Domestic Pricing



of corporate adjustment processes to increased import competition stress that firms do not usually accept increased international competition in a passive manner. Rather, they often seek (and receive) protection from increased imports, ostensibly as a "temporary" measure to allow them time to adjust to the new trade realities.[34] Sometimes such protectionist measures follow on the heels of explicit tariff reductions. The relevant question in the context of this study is whether imperfectly competitive firms are more likely to seek (and receive) such compensating forms of protection, and whether the compensating protection ordinarily received mitigates the competitive responses that are expected from the E-S model.

In sum, an overview of the literature surrounding trade liberalisation suggests a number of empirical issues that bear on the anticipated economic effects of freer trade:

1. How substitutable are foreign goods for domestic goods, and what are the main factors that condition the substitutability between the two?

2. Related to the preceding question, do the basic deductions of the E-S model still hold up, even after acknowledging that foreign and domestic producers are not homogeneous with respect to product offerings?

3. Does the ownership of domestically based firms affect the nature of their response to trade liberalisation, and (if so) how is this likely to affect conclusions regarding the effects of freer trade?

4. What is the "political economy" of trade liberalisation? That is, how does trade liberalisation actually proceed in domestic industries, especially those that are oligopolistic in structure?

5. What strategic interactions between domestic and foreign oligopolists can and do take place?

The first four questions lead to relatively straightforward empirical examinations; however, the last issue does not have as immediately obvious implications for testing deductions from the E-S model. Hence, in the following section, we review several of the contributions to the so-called "new" theory of trade and industrial organization.

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[34]. See, for example, Robert M. Grant, "Adjusting to a Strong $: Lessons from the European Experience", California Management Review, Vo. XXVIII, Number 1, Fall 1985, pp.82-97.

IV. NEW THEORIES OF TRADE AND INDUSTRIAL ORGANIZATION

In recent theoretical contributions to the literature, several basic propositions of trade liberalisation have been challenged. One such basic proposition is that reduced protection leads to increased competition and lower prices. The basis for this proposition is that foreign and domestically owned firms act noncooperatively. More specifically, in the E-S model, domestic firms are price takers. Hence, reductions in domestic tariff (or non-tariff) barriers lead to an increased supply of lower-priced imports which, in turn, oblige domestic firms to lower their prices.

A. Trade Liberalisation and Cooperative Behaviour

Several recent studies have questioned the proposition that foreign and domestically owned firms act noncooperatively. Specifically, they adopt the assumption that collusion is possible and that it is more likely, the higher the penalties for cheating in terms of foregone profits. Because protection tends to raise profitability in the absence of collusion, it reduces the penalty for cheating on a collusive agreement. By thus reducing the prospects for collusion, the protection actually increases competition. In effect, there are costs and risks to collusion for each participant. The reward is presumably higher joint profits. If higher profits are generated "exogenously", e.g. through the imposition of trade barriers", the costs of colluding may exceed the incremental profits available from colluding, on the margin. The net result may be greater levels of competition than would take place under free trade.

In this regard, Rotemberg and Saloner discuss a model where a quota can raise the profitability of foreign and domestic firms in non-cooperative equilibrium. For the reasons outlined above, this makes collusion more difficult to sustain by reducing the penalty for cheating. If collusion nonetheless takes place, the firms involved may be forced to agree on lower prices in order to make their collusion sustainable. In this case, an import quota could lead to more competition and lower prices than would exist in a free trade regime.[35] In a related vein, Davidson considers the case of a tariff which raises the noncooperative profits of the domestic firm but lowers that of the foreign competitor. If the result is to encourage the domestic firm to cheat on a collusive agreement, the tariff will likewise increase competition.[36]

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[35]. See J.J. Rotemberg and G. Saloner, "Quotas and the Stability of Implicit Collusion", Cambridge: M.I.T., mimeo, 1986.

[36]. See C. Davidson, "Cartel Stability and Trade Policy", Journal of Industrial Economics, Vol. 17, 1984, pp.219-327.

Ross suggests a model which is very similar in spirit to the Rotemberg and Saloner and Davidson models in that a tariff reduction can lead a dominant domestic oligopolist to adopt a "less competitive" pricing policy. Ross models the domestic industry as a dominant oligopoly facing a competitive fringe of foreign supply. A lower tariff shifts the oligopolist's residual demand curve inward and makes residual demand less elastic. The latter reflects the assumption that foreign supply curves are highly inelastic at higher prices. The lower tariff makes the dominant firm worse off, but it may still pay it to raise price if the fringe supply elasticity has fallen enough.[37] In graphical terms, the dominant firm could have two locally best strategies: concede some sales to the fringe or "limit price" fringe firms out of the market. Assume the latter is the most profitable strategy. Now let the tariff fall so that foreign firms can now enter the market at lower prices, but assume that their supply curves remain highly inelastic at higher prices. In this circumstance, conceding some sales to the fringe, i.e. establishing a higher price, may be the more profitable strategy. So an increase in price in response to the lower tariff is the optimal response.

Ross' dominant domestic oligopolist, in effect, views the foreign supply curve as being more inelastic after the removal of a tariff than before its removal. Hence, it sees its derived demand curve as being more inelastic after the removal of a tariff than before. Similarly, the Rotemberg and Saloner and Davidson models effectively view the domestic oligopolist's perceived demand curve as being more elastic after the imposition of trade restrictions than before. This is because the penalties of cheating are seen to be lower after the imposition of the trade barrier. As a result, foreign and domestic firms may be forced to agree on lower prices in order to make their collusion sustainable. In both cases, the perceptions of the domestic oligopolist are reversed from those in the E-S (and other "traditional") trade models, where the domestic firm is either a price taker (i.e. faces a perfectly elastic demand at the world price) and/or where the expansion of the effective market (through reducing trade barriers) leads to an increase in the number of effective substitute products and, presumably, a more elastic perceived demand curve for the domestic oligopolist.[38]

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[37]. See Thomas Ross, "Movements Toward Free Trade and Domestic Market Performance with Imperfect Competition", Carleton University, Department of Economics, Working Paper 86-08, mimeo, October 1986.

[38]. Equivalently, the traditional view would hold that there are greater incentives both for cheating and entry when firms collude in a larger market, since detection of any cheater is

Ross acknowledges that the empirical relevance of his model is restricted to cases of a large economy which produces almost all the world's supply of the good so that foreign producers are, in fact, very small. Then their marginal costs may rise considerably (in the short-run, at least) should they try to expand their production significantly. Another relevant case might be where there are both tariffs and import quotas in a domestic industry, so that foreign firms cannot expand output beyond a certain amount. Both of these are obviously special cases. The models of cooperative behaviour embodied in the Davidson and Rotemberg and Saloner models have also been suggested to rest upon ad hoc assumptions of limited relevance in the "real world."[39] Their ad hoc nature is seen by contrasting them with Dixit's model of a duopoly that is unable to sustain collusion by themselves. An import quota imposed by the home government makes it profitable for the home firm to raise its price somewhat, with the assurance that the foreign firm will not be able to sell more by undercutting. Then the foreign firm can sell its quota amount at a higher price. The effect of the quota in this case is to facilitate collusion.[40] Nevertheless, the models stand as potentially relevant theoretical challenges to conventional deductions about the competitive impacts of trade liberalisation.

Under a set of restrictive conditions, Venables is also able to demonstrate that the imposition of a domestic tariff can lead to increased competition in the domestic economy. In his model, marginal cost is constant but there are positive fixed costs along with free entry. The imposition of a small tariff by one country would raise the profitability of domestic firms and lower the profitability of foreign firms, leading to entry in the domestic market and exit in the foreign market. This makes the home market more competitive and the foreign market less competitive. Venables is able to show that for a small tariff, the indirect effect on competition has a stronger effect on prices than the direct effect of the tariff itself. That is, the price of the protected good will fall in the country that imposes

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less likely.

39. See Paul Krugman, Industrial Organization and International Trade, National Bureau of Economic Research, Working Paper, No. 1957, June 1986, mimeo.

40. See Avinash Dixit, "International Trade Policy For Oligopolistic Industries", Economic Journal, Vol. 94, 1984, pp.1 - 16.

the tariff, while rising in the rest of the world.[41]

Venables model is a version of Brander and Krugman's model of "reciprocal dumping" with Cournot assumptions.[42] The basic idea is as follows: assume that foreign and domestic firms are selling in each others' markets. At the free-entry equilibrium, foreign and domestic prices are such that there are zero profits for a representative firm. Now a tariff is imposed in the domestic economy. Profits to foreign firms selling in the domestic market decline as they are essentially identical to domestic producers and (therefore) cannot pass the tariff through to consumers in the domestic market. Therefore, foreign firms need a higher price in their own domestic market to recapture profits lost in the tariffed market. Hence, exit takes place in the foreign market with a resulting price increase in that market. Firms resident in the tariffed market who sell into the foreign market, therefore earn higher profits on their sales into the latter market. Entry will subsequently take place in the tariffed market driving price down in that market until a zero-profit equilibrium is restored in that market.

The assumptions underlying the Venables' model seem unsuited for analyzing the Canadian case. In particular, it seems unlikely that lower profits in the Canadian market would encourage any significant exit of firms from the markets of Canada's trading partners. Therefore, it seems unlikely that Canadian firms will enjoy higher profits as a result of this indirect effect. Given the zero-profit equilibrium condition, it is this indirect effect that ultimately leads to lower prices in the domestic market. It is also unlikely that in the majority of cases, Canadian producers price as pure competitors behind a protective tariff. Hence, the effect of imposing a domestic tariff would presumably be an increase in the price-cost margin of domestic firms. The zero-profit equilibrium in this case is more likely to be restored by cost-increasing entry of marginal suppliers and/or increased product differentiation, along the lines suggested by the E-S model, with higher price levels at the new equilibrium.

One other recent study that identifies "unusual" potential impacts of trade liberalisation is Buffie and Spiller's examination of quota liberalisation in oligopolistic industries. A key feature of their model is the relationship between the

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41. See A.J. Venables, "Trade and Trade Policy With Imperfect Competition: The Case of Identical Products and Free Entry", Journal of International Economics, Vol. 19, 1985, pp.1-19.

42. See J.A. Brander and P.R. Krugman, "A Reciprocal Dumping Model of International Trade", Journal of International Economics, Vol. 15, 1983, pp.313-321.

number of firms in an industry and the competitive conjectures held by those firms. They argue that in a stable industry, an increase in a quota lowers price and firm profits in the short run regardless of the nature of firm conjectures and the level of the initial quota. In the absence of any barriers to entry, economic profits must be zero in the long-run. Thus, following the increase in the quota, firms will leave the industry until a normal rate of profit is restored. If the degree of oligopolistic coordination increases with the smaller number of firms left in the industry, it is possible that domestic price may rise in the long-run.[43] The Buffie-Spiller model highlights the critical importance of the "price-taking" assumption in the E-S model. In the Canadian context, it seems unlikely that a reduction in the number of domestic competitors would affect oligopolistic coordination in the international marketplace. Moreover, their model, along with most others discussed in this section, ignores the possible impact of trade liberalisation on costs. Specifically, trade liberalisation may encourage greater efficiency, both for the reasons suggested by the E-S model, as well as because potential entrants would have a stronger reason to believe that their lower costs will not be offset by more stringent trade protectionism. We briefly consider recent theoretical contributions to these latter possibilities.

B. Trade Liberalisation and Product Differentiation

In various interpretations of the E-S model, the main source of efficiency gain is seen as resulting from increased product specialization by domestic producers. In reviewing this literature, McFetridge notes that the reason underlying the "excessive product diversity" argument is that attempts by firms to expand their shares of markets for their existing products would result in price declines of a magnitude sufficient to reduce their total profit. Entry into new markets is presumed not to affect the price prevailing in those markets, ostensibly because domestic firms are price-takers in the world market. Because expansion in domestic markets is expected to depress price, firms will choose to add new product lines, even though this forces them to incur additional product-specific costs. This behaviour would change with trade liberalisation, since domestic producers would be faced with the price elastic world (or North American) demand rather than the price-inelastic Canadian demand for their products. They would have an incentive (owing to the more open foreign market) and, indeed, would be compelled (by the more open domestic market) to expand output of their principal products and to drop peripheral lines. Domestic production would subsequently be characterized by fewer product lines and longer

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43. See Edward F. Buffie and Pablo Spiller, "Trade Liberalization In Oligopolistic Industries: The Quota Case", Journal of International Economics, Vol. 20, 1986, pp.65-81.

production runs, a substantial proportion of which would be exported. Abandoned product lines would either be imported by independent wholesalers or, in the case of MNEs, supplied by foreign affiliates under specialization agreements or world product mandates.[44]

Bishop and Crookell suggest that protective domestic tariffs have encouraged an inward and protective attitude among Canadian producers. As they put it: "With protective tariffs in force, manufacturers in Canada have competed for decades with a built-in bias toward growth through product diversification rather than through penetration of foreign markets."[45] The net result is again a preference to manufacture and sell more products in the Canadian market rather than to concentrate on fewer products for world markets. While the protection of the Canadian market created this bias, the growth of the domestic market maintained the attractiveness of the strategy over time. Bishop and Crookell express the belief that a decline in tariff protection will bring some changes to the inward-looking strategies of Canadian manufacturers, although they are not explicit as to whether this will occur for reasons other than those suggested by McFetridge. In any case, the net result would presumably be a decrease in the variety of products produced by domestic firms and an increase (or at least no decrease) in the variety of products available to Canadian consumers. Given the existence of product economies of scale, increased specialization of domestic production would be associated with increased domestic efficiency.

Daly and Globerman suggest an additional link between trade liberalisation and production efficiency that is not as directly in the tradition of the E-S model. Specifically, they argue that trade barriers reduce the incentive of domestic producers to adopt new, "best - practice" technology. They do this in two ways: (i) they reduce competitive pressures on domestic managers to minimize costs and, hence, promote "X - inefficiency."; (ii) they reduce the scale at which Canadian production units operate, primarily by encouraging product proliferation and shorter production lengths of run. Given that new technology is frequently characterized by significant indivisible costs associated with its adoption, more frequent "product changeovers" imply smaller output volumes over which these threshold costs can

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44. See D.G. McFetridge, "The Economics of Industrial Structure: An Overview", in D.G. McFetridge, ed., Canadian Industry in Transition, Ottawa: Minister of Supply and Services Canada, 1986, p.37.

45. Bishop and Crookell, op. cit., p30.

be spread.[46]

A number of recent studies have focussed on the relationship between trade liberalisation and product differentiation. The focus has not been so much on the cost implications of trade liberalisation as on the variety of products available to domestic consumers. These models apply the concept of spatial location to consumer demand. That is, consumers are distributed according to their unique tastes and preferences in "product characteristics space." The implication is that products produced by different suppliers are explicitly recognized to be imperfect substitutes. Different conclusions can be derived, where it appears that the key factor conditioning the results obtained is the assumed degree of substitutability between foreign and domestically produced goods.

In one representative model, Lancaster derives the traditional E-S result that non-cooperative pricing in a monopolistically competitive setting leads to more products being produced in each country under autarky, although trade still gives consumers access to greater variety through imports.[47] The reason that the degree of product variety increases as the result of the imposition of tariffs is basically the same in both small and large - country cases: with intra-industry trade in a monopolistic competition setting, imports are close but imperfect substitutes for home goods. Tariffs lower the competitiveness of imports, so that the local firms have more monopoly power (lower price elasticity of demand) and their profits rise. But excess profits induce entry and (thus) more firms and more products.

Lyons derives a different set of conclusions. In his model, each country provides fewer products under autarky than it does when there is international trade. Trade thus gives access both to foreign varieties and more that are home produced.[48] The difference is that in Lancaster's model, trade raises competition, pushing price down and reducing the number of sustainable products. In Lyons' model, trade provides each

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46. See D.J. Daly and S. Globerman, Tariffs and Science Policy: Applications of a Model of Economic Nationalism, Toronto: University of Toronto Press, 1976.

47. See Kelvin Lancaster, "Protection and Product Differentiation", in Henryk Kierzkowski, ed., Monopolistic Competition and International Trade, Oxford: Clarendon Press, 1984, pp.34-50.

48. See B.R. Lyons, "The Pattern of International Trade in Differentiated Products: An Incentive For the Existence of Multinational Firms", in Henryk Kierzkowski, ed., op. cit., pp.157-169.

consumer with a product nearer to his ideal, raising per capita demand and thus profit per product. More product differentiation is therefore required if further entry is to be unprofitable. By extension, product lengths of run could conceivably be smaller under free trade than under autarky in the Lyons' model.

If foreign and domestically produced goods are relatively close substitutes, the presumption that trade will draw consumers into the market who otherwise would not have been consumers seems unlikely. Also, Lyons' results rest on the assumption that firms first choose their product and then choose a price. In effect, firms do not anticipate the long-run competitive equilibrium as ruling in their "product space" before committing to introducing new products. If they did, a "contestable" market model would lead to the conclusion that actual entry of new products is not required to assure a zero-profit equilibrium.

C. Trade Policy and Imperfect Competition

Recent models considering the nature of strategic interactions between imperfect competitors have their counterparts in models that consider strategic interactions between countries. Many of these recent contributions are concerned with the potential for sovereign governments to transfer "rent"[49] from foreigners to nationals through various trade policies. Our concern with these models is more specific. Namely, do they suggest any reason to believe that firms in more concentrated domestic industries have a disproportionate influence on trade policy.? If so, there is a basis for arguing that broad trade liberalisation policies are more likely to be subverted politically in imperfectly competitive industries. In particular, visible concessions in the way of tariff reductions may be more than offset by the imposition of less visible non-tariff barriers.

On the surface, there is a strong a priori reason to believe that national governments are less likely to be attracted to trade liberalisation strategies in oligopolistic industries. This is because higly concentrated industries are more likely to be characterized by the existence of actual or potential economic rent. The recent "strategic trade policy" literature emphasizes the potential for governments to increase national welfare by implementing trade restrictions in situations where entry is restricted and economies of scale exist in order to generate economic rent for domestic firms and/or to transfer rent from

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[49]. For a review of a number of these studies, see Paul Krugman, Industrial Organization and International Trade, op. cit.

foreign firms to domestic firms.[50] However, critics of this literature have pointed out that the conditions under which trade restrictions are likely to be welfare-improving in oligopolistic industries- in terms of rent capture- are fairly restrictive. Specifically, slight changes in assumptions underlying these models can reverse their conclusions. In particular, it can be shown that when foreign countries are inclined to retaliate against the imposition of trade restrictions, a policy of mutual trade liberalisation is still the dominant welfare improving trade strategy.[51] Hence, if domestic oligopolists are more effective at solicitating government "offsets" to increased import competition, it is presumably because they are particularly efficient rent-seekers in the "market" for government regulation, rather than because trade restrictions have net social benefits in oligopolistic industries.

The relationship between market structure (among other variables) and trade protection has been subjected to extensive study by researchers. In one review of the relevant literature, Trebilcock concludes that political variables better explain existing patterns of trade protection than do economic variables. Among the economic variables cited by Trebilcock as being significant are market concentration on the firm side (implying more concentrated lobbying efforts and fewer free rider problems) and large numbers of low-skilled, low-wage workers. Moreover, when firms and work forces are geographically concentrated in particular regions or communities, the economic costs of decline become concentrated in ways to which the political system is particularly sensitive.[52]

Trebilcock's assessment of the relationship between concentration and trade protection does not receive much support

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50. An extremely lucid summary of the relevant literature can be found in James A. Brander, "Shaping Comparative Advantage: Trade Policy, Industrial Policy, and Economic Performance" in Richard G. Lipsey and Wendy Dobson, eds., Shaping Comparative Advantage, C.D. Howe Institute, Policy Study No. 2, Scarborough: Prentice-Hall Canada Inc., 1987, pp.1-55.

51. See J. David Richardson, "Strategic Trade Policy: Research and Practice in the United States", in Lipsey and Dobson, eds., pp.91-108.

52. See Michael Trebilcock, The Political Economy of Economic Adjustment: The Case of Declining Sectors, Toronto: University of Toronto Press, 1986.

in a review of the determinants of public aid to industry.[53] This study finds a definite link between tariff reductions and government assistance. Specifically, tariff reductions are usually followed by increases in government grants, where the latter can be construed as potential non-tariff barriers to trade. However, the rate of grant increase is usually below the rate of tariff reduction, and the organizational strength of an industry does not seem to be the most significant variable determining the assistance the industry receives. This sceptical assessment of the strength of any relationship between industry concentration and trade protection is reinforced by several statistical studies of the relationship. A study by Helleiner found that market concentration was directly related to the level of effective protection in 1961; however, no such relation appeared in 1970. Furthermore, changes in tariffs between 1961 and 1970 were inversely related to concentration.[54] Another study by Caves models both the demand for and supply of tariff protection. It concludes that the demand for tariff protection is likely to be directly related to industry concentration, but not necessarily the supply. Rather, supply of tariff protection is directly related to an industry's exposure to economic adversity. Economic adversity, in turn, is likely to generate political action when there are large numbers of low-skilled, low-wage workers involved.[55]

More recently, Ray and Marvel conclude (for a sample of industrialized countries) that concentrated industries do not receive notably greater than average protection, although they suggest that this may be because protection is often directed towards imports from developing countries and concentrated industries may not need such protection.[56] Anderson and Baldwin examine directly the determinants of protection against manufactured imports from developing countries for a sample of 12 industrial countries. They find (among other things) that it is the labour-intensive, low-wage industries with low value-added shares of output that are most highly protected. Industries with

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53. See Andre Blais, A Political Sociology of Public Aid to Industry, Vol. 15, Royal Commission on the Economic Union and Development Prospects for Canada, Toronto: University of Toronto Press, 1986.

54. See G.K. Helleiner, "The Political Economy of Canada's Tariff Structure: An Alternative Model", Canadian Journal of Economics, May 1977.

55. See Richard E. Caves, "Economic Models of Political Choice: Canada's Tariff Structure", Canadian Journal of Economics, May 1976.

56. See Ray and Marvel, op. cit., p.457.

fewer firms and large number of employees also tend to be protected more; however, industries whose output is produced by a few large firms tend often to be protected less. They interprete the latter finding as suggesting that despite the lower costs of lobbying collectively in oligopolistic industries, it may be politically costly to assist such industries overtly.[57]

In sum, there is reason to believe that unless a trade liberalisation agreement is comprehensive with respect to tariff and non-tariff barriers, governments will react to net increases in imports in specific industries with policies designed to slow-down or reverse the flow of imports. The impact of such policies will be to mitigate the efficiency gains from freer trade. However, there is no evidence supporting the belief that offsets to trade liberalisation will be related to the degree of oligopoly in an industry. For this reason, at least, there is no reason to believe that the gains from trade liberalisation in oligopolistic industries will be lower than those suggested in several applications of neoclassical models.[58]

D. Trade Liberalisation and Multinational Enterprises

As noted above, a number of researchers have recently identified the potentially critical role of the multinational enterprise (MNE) in shaping the economic impacts of freer trade. This is an especially relevant potential issue in the Canadian context given the relatively high level of foreign ownership in Canadian manufacturing industries. Unfortunately, notwithstanding the extensive literature on the determinants and effects of foreign direct investment, there has been relatively little work done on modelling the potential responses of host country MNE affiliates to free trade.

Burgess identifies the key factors determining whether a mutual reduction in trade barriers will cause the MNE to close down in Canada or to rationalize as follows: 1. the costs of transporting goods between the two markets; 2. the size of the

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57. Kym Anderson and Robert E. Baldwin, The Political Market for Protection in Industrial Countries: Empirical Evidence, World Bank Staff Working Paper No. 492, Washington, D.C.: The World Bank, 1981.

58. The classic study in this genre is R.J. Wonnacott and P. Wonnacott, Free Trade Between the United States and Canada: The Potential Economic Effects, Cambridge: Harvard University Press, 1967. For an applied general equilibrium approach to estimating gains from free trade that arrives at a comparable estimate to the preceding study, see Richard Harris with David Cox, Trade, Industrial Policy and Canadian Manufacturing, Toronto: Ontario Economic Council, 1984.

Canadian market relative to minimum efficient scale; 3. the extent to which unit costs decline with the scale of output, and 4. relative production costs in the two countries at comparable levels of output.[59] While some MNEs may find the closure option attractive, Burgess suggests that widespread closure of subsidiaries in Canada seems unlikely given that a rationalized manufacturing sector would offer higher rather than lower rates of return to capital. He speculates that the typical subsidiary of a U.S. MNE, rather than being a miniature, branch - plant replica of the parent, will tend either to specialize in a particular product line to serve both the Canadian and U.S. markets, or to design, process and package intermediate goods for distinctly Canadian market conditions.[60]

In principle, a profit-maximizing MNE affiliate faces the same set of incentives in a liberalised trade environment as does a domestically owned firm of comparable size and scope. However, the MNE affiliate may face a different set of relative costs associated with alternative forms of adjustment to trade liberalisation. For example, it may be easier for the MNE affiliate to specialize in specific stages of production owing to the relatively low cost "internal" markets available to facilitate forward and backward linked stages of production. It may also be the case that physical distance from the parent company decision-maker leads to a slower adjustment to trade liberalisation on the part of MNE affiliates.

Bishop and Crookell suggest that MNEs will react to trade liberalisation in one of two ways: either by rationalizing production on a world-wide basis or by assigning world product mandates to individual affiliates.[61] While the distinction between the two is not crystal clear, the former essentially involves an affiliate being designated responsibility for the production of a specific product or component (or a set of

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59. See David F. Burgess, "The Impact of Trade Liberalisation on Foreign Direct Investment Flows", in John Whalley with Roderick Hill, eds., Canada - United States Free Trade, Toronto: University of Toronto Press, 1985, pp. 193-199.

60. Ibid., p.198.

61. See Bishop and Crookell, op. cit. For a sceptical view of the liklihood that MNEs will find it profitable to introduce world product mandates, see Alan Rugman and Sheila Douglas, "The Strategic Management of Multinationals and World Product Mandating", Canadian Public Policy, Vol.XII, June 1986, pp.321-328. Bishop and Crookell largely dismiss the possibility that MNE subsidiaries in Canada will close down and repatriate production responsibilities to larger country affiliates, although they offer little empirical evidence supporting this assertion.

products or components). All of the surrounding activities including marketing strategy and product-related research and development remain centralized in the home country, although some process-related research and development may be moved out into the affiliate. In the case of world product mandates, individual affiliates are assigned "end-to-end" responsibility for the design, development, production and marketing of specific products. While either strategy would presumably entail some efficiency gains for the organization, Canadian policymakers have indicated a clear preference for the world product mandating route, as it results in a more "desirable" mix of economic activities in Canada, most notably more local product design and development.

Bishop and Crookell caution that more research is needed inside parent and subsidiary organizations before the reactions of MNEs to tariff removal in Canada can be understood, let alone predicted. Nevertheless, they suggest that MNE response will vary according to product market considerations, as well as organizational maturity. Specifically, rationalized production typically involves products with sensitivity to price and quality, while mandated products are typically characterized by an emphasis on quality and technology.[62]

In a related vein, Wolf argues that it is extremely difficult to forecast the reaction of foreign subsdiaries in Canada to trade liberalisation, notwithstanding that there is a fairly well developed body of empirical evidence bearing upon the reaction of MNEs to increased import competition, and that some of this evidence compares the reaction of MNE affiliates to domestically owned counterparts.[63] He cautions that the various approaches that have been taken all suffer potentially serious methodological shortcomings. Nevertheless, the evidence, taken as a whole, offers some insight into this important policy issue.

In the Canadian context, Daly and MacCharles undertook a survey of the response of 30 firms in Canada to trade liberalisation under various stages of the GATT.[64] They found that almost half the firms in the sample had become more specialized or else were moving in that direction, as a response

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62. Ibid., p.325

63. See Bernard Wolf, "The Reaction of U.S. - based Multinational Enterprises to Free Trade Between Canada and the United States: Impediments to Empirical Verification", Paper presented at the Fourth International Congress, North American Economics and Finance Association, Montreal, July 23 - 26, 1986.

64. See D.J. Daly and D.C. MacCharles, Canadian Manufactured Exports: Constraints and Opportunities, op. cit.

to trade liberalisation. Of the 14 firms classified as specialized or specializing in their existing product lines, most had increased their production of specialized goods, reduced product diversity and improved efficiency. A substantial percentage of Canadian-controlled firms were contemplating the next round of spending on plant and equipment outside of Canada as a means of reducing costs. About 20% of the foreign affiliates had negotiated with their parents to acquire a world product mandate, allowing them to specialize in a major product line. A somewhat lower percentage had received approval for a plant specialization arrangement, meaning these Canadian plants had become suppliers of a particular product line to their parents' marketing organizations, or of components to affiliates.

On the basis of their interviews, Daly and MacCharles conclude that relatively fewer firms in the foreign sector of control were responding to the changing trade environment with increased specialization. They ascribe this to the more limited ability of subsidiary management to take the necessary entrepreneurial initiatives, as well as a more limited incentive. In the authors' viewpoint, the latter reflects the "more protected" environment in which the subsidiaries exist, as a result of being part of large corporations with firm-specific advantages. These factors gave subsidiary management a false sense of security that led them to ignore the changing world trade environment. The more limited ability of subsidiary management to take action reflects the bureaucracy within large MNEs, as well as the reluctance of parent company management to accept the risks associated with making Canadian subsidiaries sole suppliers of products.[65] Notwithstanding the fact that subsidiaries were apparently slower to address changes in their market environment than their Canadian-owned counterparts, remedial adjustments by foreign-owned affiliates do eventually take place.

The Daly and MacCharles study is based upon a relatively small sample of observations. Hence, their conclusions regarding the speed of adjustment of MNE affiliates must be tempered by caution. Indeed, several case studies of specific industries arrive at different conclusions. For example, Ballance and Sinclair argue that in consumer electronics, MNEs have been relatively quick to identify low-wage locations for the later stages of production. For example, in response to Japanese competition, American producers moved many of their assembly operations to Mexico and South-East Asia, and offshore processing became a common strategy throughout the industry as price

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[65]. Ibid., pp.74-75.

competition spread to other products and markets.[66]

Franko also notes the rapidity with which MNEs in OECD consumer electronics industries moved on to other products and other production sites when faced with competitive challenges from abroad. He argues further that the petrochemical and synthetic textile industries have "managed" adjustments to competition better than the steel industry, in part because the former are populated by MNEs.[67] In a related vein, Ilgen contrasts the experience of U.S. and German chemical firms with those of France and England. He argues that the former were better able to respond to competitive import pressures than the latter[68] in part because of their greater size and geographic scope.

In short, the available evidence offers no conclusive assessment of the comparative speed of adjustment of MNE affiliates to a more competitive international trade environment; however, the evidence suggests that MNEs generally do respond to trade liberalisation through a variety of approaches including rationalizing production geographically, specializing affiliates in assigned product areas, and dropping lower value-added products from their product portfolios. Bishop and Crookell conclude that MNEs in the European Economic Community adopted a variety of approaches to production rationalization following the implementation of free trade, as did firms in the North American farm equipment industry, although the granting of world product mandates to individual affiliates was comparatively rare.[69]

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66. See R.H. Ballance and S.W. Sinclair, Collapse and Survival: Industry Strategies in a Changing World, London: George Allen and Unwin, 1983, pp.129-177. The authors note that other industries facing similar conditions have not necessarily turned to offshore processing. However, the reason is not related to the extent of foreign ownership. Rather, it is because the consumer electronics industry is especially capable of physically separating the production stages.

67. See Lawrence Franko, op. cit.

68. See Thomas Ilgen, "Better Living Through Chemistry: The Chemical Industry in the World Economy", International Organization, Vol. 37, No. 4, Autumn 1983, pp.648-680. The principal form of rationalization taken by firms in the industry was to move into higher value-added products.

69. Bishop and Crookell, op. cit.

We assess the available evidence as supporting a conclusion that foreign-ownership, per se, does not significantly[70] condition the long-run consequences of trade liberalisation. That is, where import competition is effective, foreign affiliates will respond by rationalizing production processes in the general manner suggested by the E-S model, although the level and nature of "overhead" activities, including R & D, may also change. However, the Daly-McCharles findings, as well as other evidence discussed in a later section, suggests that foreign ownership may delay reactions to the competitive pressures created by increased import competition.

While there is no compelling evidence that MNEs will move production back to the larger home country domestic market, this possibility cannot be necessarily dismissed in any individual industry. On balance, however, this phenomenon is likely to be minor if the experience of the European Economic Community is any guide in this regard. With the formation of the Common Market, foreign manufacturing subsidiaries which had been built to get behind trade barriers were generally not closed. Rather, production rationalization generally took place over time.[71]

E. Summary

In summary, recent contributions to the literature suggest a number of characteristics that appear to condition the competitive consequences of trade liberalisation; most notably, the nature and extent of product differentiation (broadly defined) and the nature of the strategic interactions between rival firms in an industry. With respect to the former, there is a strong suggestion in the literature that the competitive consequences of trade liberalisation will be blunted by a limited substitutability between foreign and domestically produced goods, and by market power enjoyed by domestic firms. With respect to the latter, a newly emerging literature establishes the theoretical possibility of perverse, i.e. anti-competitive responses to trade liberalisation associated with increased incentives to collude, implicitly or explicitly.

Ultimately the relevant issues are empirical ones. Hence, it is appropriate to review a representative sample of studies that

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70. This basic assertion is supported by a variety of evidence cited in D.G. McFetridge, Trade Liberalization and the Multinationals, Study submitted to the Economic Council of Canada, April 1987.

71. See Bernard M. Wolf, "Canadian Direct Investment in the United States: The Impact of Freer Trade", Paper presented at the North American Economics and Finance Association, Allied Social Sciences Association Meetings, New York, December 28 - 30, 1985.

have focused on the impacts of trade liberalisation. In this regard, trade liberalisation can be direct or indirect. That is, it can be the outcome of formal agreements between governments to lower tariff and non-tariff barriers to trade. Alternatively, it can be the result of changes in exchange rates or other determinants of international competitiveness in specific industries that affect the degree of competition facing local producers. While theoretical studies have focused on the former source, the latter also seems relevant to consider, since the effects, in principle, should parallel more formal attempts to reduce trade barriers.

V. REVIEW OF THE EMPIRICAL EVIDENCE

Most empirical studies of the effects of increased economic integration rely upon a comparison of ex ante and expost conditions for an industry or set of industries. In one general approach, the effects of integration are estimated directly by relying upon specified analytical models, the parameters of which are estimated through regression analysis. Dependent variables, including price-cost margins, average costs and trade flows are related to independent variables, including measures of trade liberalisation or levels of import competition in domestic industries. In another approach, the effects of trade liberalisation are examined through case studies which compare and contrast the performance of an industry before and after economic integration or increased import competition.[72] A third approach involves using calibrated models of industries to simulate the effects of different government policies, where the critical parameters (such as price and output elasticities) are assigned values based on other independent studies.[73] This latter approach is quite new, and the models inevitably rely on ad hoc assumptions to close gaps in the data and to incorporate conjectural variations into the model. While the methodology is promising, at this stage it offers very limited policy guidance. Hence, we will concentrate our review upon more traditional econometric studies and case studies.

No claim is made here that we have identified all relevant studies within the limits imposed by time and available

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72. For a discussion of methodologies used in examining the effects of economic integration, see Peter Robson, The Economics of International Integration, Second Edition, London: George Allen and Unwin, 1984.

73. An example of a study in this genre is R. Baldwin and P.R. Krugman, "Market Access and International Competition: A Simulation Study of 16K Random Access Memories", Paper presented at C.D. Howe Institute Workshop on Trade and Industrial Policy, Toronto, September 1986.

resources. The literature bearing on the empirical effects of trade liberalisation is both broad and diffuse. Nevertheless, a fairly wide net was cast, and the literature reviewed was reasonably consistent in terms of the results suggested. Hence, we are fairly confident that the conclusions drawn from the studies reviewed are relatively robust.

A. Statistical Studies

In an earlier section, we noted that a wide array of statistical studies offered basic support for the main deductions of the E-S model. This point is underscored by Jacquemin's observation that most cross-sectional studies (drawn from a variety of countries) which relate prices, profitability and price-cost margins to various measures of foreign competition, indicate strong support for the hypothesis that imports restrict the exercise of market power in imperfectly competitive industries.[74]

A number of these studies draw specifically upon the Canadian experience. For example, Spence found for a sample of Canadian manufacturing industries that the U.S. price-cost margin is higher than the Canadian margin. He infers from this that the tariff or effective rate of protection is not high enough to balance the U.S. cost - advantage, and that for many industries, foreign competition holds the Canadian prices down.[75] In a similar vein, Hazledine found that Canadian domestic suppliers "price up" to the world price plus the Canadian tariff to a degree governed by domestic competitive conditions.[76]

While increased import competition apparently is generally associated with downward pressure on prices and price-cost margins in domestic industries, the challenge raised by recent theoretical contributions is that such adjustments will be slower, and perhaps insignificant, in industries characterized by significant product differentiation and/or relatively high levels

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74. Alexis Jacquemin, op. cit.

75. See A. Michael Spence, "Efficiency, Scale and Trade In Canadian and United States Manufacturing Industries" in R.E. Caves, et. al., Studies in Canadian Industrial Organization, Royal Commission on Corporate Concentration Study Number 26, January 1977, pp.240 - 277. Another interpretation consistent with the evidence is that excessive entry in tariff protected Canadian industries reduces price - cost margins.

76. Tim Hazledine, "Testing Two Models of Pricing and Protection With Canada/United States Data", Journal of Industrial Economics, Vol. 29, 1980, pp.145-154.

of concentration.[77] Unfortunately, relatively few statistical studies have sought to identify the impact of import competition on domestic industries stratified by meaningful measures of both the nature and degree of imperfect competition. This represents an apparently important dearth of evidence, since available studies suggest that the speed, if not the direction of adjustment to increased imports will vary according to the specific characteristics of imperfect competition. For example, Carlson found that trade adjustments caused by formation of the European Free Trade Association proceeded less rapidly in industries characterized by product differentiation.[78]

In a more recent study, Williamson estimated a simultaneous equation model using pooled cross-section data on 36 Australian manufacturing industries classified at the 4 digit SIC level for the period 1968/69 to 1977/78. He confirmed the ubiquitous finding that the gross markup of domestic suppliers was significantly and positively related to the import price. That is, domestic incumbents tended to cut their margins in response to a fall in import prices, while any weakening of the pressure of price competition from imports resulted in an increase in the margins reaped by local suppliers.[79] More interesting, perhaps, is his identification of the factors that condition the response of local suppliers to import competition. Specifically,

1. the larger the existing level of import share in the market, the greater the responsiveness of domestic markup to changes in the import price;
2. domestic price sensitivity to changes in the price of import supply tends to be significantly reduced in periods of high capacity utilization in the domestic industry;
3. industries that are more highly concentrated exhibit a more restrained markup reaction;
4. product differentiation based on "demand - pull" marketing of standardized goods, or where goods involve complex combinations of attributes, mutes the price responsiveness of the domestic industry;
5. the percentage of total value added under foreign control in an industry exhibits a negative and significant effect on the

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77. See Caves, op. cit., p.382.

78. See S. Carlson, "Market Information: Selling Intensity and the Dynamics of International Economic Integration", De Economist, Vol. 122, 1974, pp.502-520.

79. Peter Williamson, "Multinational Enterprise Behaviour and Domestic Industry Adjustment Under Import Threat", The Review of Economics and Statistics, Vol. LXVIII, No. 3, August 1986, pp.359-368.

sensitivity of domestic markup to import prices.[80]

The influence of product differentiation operates through the market for information. Specifically, it takes time for domestic consumers to become aware of the availability of lower-priced import substitutes and to become familiar with the attributes of these new (to them) products. Since learning diffusion is presumably a function of accumulated experience, it can be expected that the cross-price elasticity of demand, i.e. the elasticity of demand for domestic goods with respect to import prices, will increase over time, all other things constant. Therefore, it might be expected that the pricing behaviour of domestic suppliers will also become more sensitive over time to changes in import prices.

Williamson interpretes the evidence with respect to industrial concentration as indicating that monopolists (or dominant-firm oligopolists) recognize a greater cost of rapid retaliation to the value of short-term profits from the higher margins initially foregone. In effect, dominant firms choose to cede market share rather than reduce their mark-ups on inframarginal sales, at least in the early stages of import competition. Obviously, this is one possible response to a dynamic optimisation problem. It is a more likely response, the more durable the perceived cost advantages of the foreign competition, the lower the supply elasticity of imports and the slower the growth of the domestic market. It should be noted that Williamson does not test for a "threshold" effect of concentration. That is, he does not consider the possibility that (below some critical level of concentration) import competition will have no effect on prices because firms price competitively in the domestic market.

Finally, results with respect to the foreign ownership variable are interpreted as follows. Since substitution of imports for domestic production within the MNE partially bypasses the open market, domestic producers see less benefit to be gained from price retaliation, since the price charged by independent local competition is unlikely to significantly influence the MNE's sourcing decision. The MNEs meanwhile have less incentive to reduce the prices of their domestically produced output if they are themselves the conduit for increased imports, since direct canibalization would in large part result.[81] Again, a policy of preserving a higher markup on infra-marginal sales, while foregoing marginal sales at a lower mark-up, presumably can be an optimising strategy under certain circumstances, although it need not always be so. In particular, it is less likely to be

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80. Ibid., pp.364-365.

81. Ibid., p.366

so in a non-cooperative oligopolistic setting, where production is characterized by economies of scale.

While Williamson's results are plausible, the theory underlying his interpretation of the evidence is not as rigorous or as well developed as one might like. Therefore, it is difficult to establish whether his results are idiosyncratic to his sample, or whether they are generalizable across different countries for different points in time. In particular, models have been developed demonstrating that aggressive price reductions can be the optimal response of incumbent oligopolists faced with "outside" competition, especially when production is characterized by decreasing unit costs. Both more theoretical and statistical work is desirable focusing on the factors that condition the response of domestic prices and price-cost margins to increased import competition.

Statistical evidence with respect to the impact of increased export competition on domestic prices and price-cost margins is both limited and somewhat inconclusive. A number of studies suggest that exports reduce industrial profitability; however, recent research on industries in the United Kingdom shows a significant positive effect of the rate of exports on an industry's profit margin along with the anticipated negative effect from the rate of imports. And in other countries, such as Belgium and Japan, no significant effect of export rates on profitability has been found.[82] Jacquemin suggests that one possible explanation for these mixed results is a failure to distinguish precisely between open and sheltered sectors for purposes of identifying when it is possible for domestic firms to price discriminate in the home market. Also, it may be the case that domestic firms are periodically price makers on international markets. In any case, it would be useful to obtain more evidence on the relationship between export intensity and price-cost margins in domestic industries, and particularly on the factors that condition the relationship.

As Hazledine suggests in his interpretation of the available evidence, there is little doubt that trade liberalisation would reduce domestic prices directly; however, the precise magnitude of the link between trade protection and imported and domestic prices remains problematic.[83] In particular, the assumption that Canadian firms are price-takers and that the law-of-one-price is a basis for predicting post-liberalisation domestic price levels

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82. See Jacquemin, op. cit.

83. Tim Hazledine, "Liberalized Trade Relations Between Canada and the United States: The Consumer Interest", University of British Columbia, Department of Agricultural Economics, September 1985, mimeo.

seems valid, only as a longer-run approximation.[84] Hazledine concludes that a mixed hypothesis is called for, which would allow both external (import) and internal (factor prices, costs) factors to play a role; however, given our current state of knowledge, assignment of precise weights to these factors is guesswork.

The statistical evidence reviewed to this point therefore suggests that (over time) trade liberalisation will promote an improvement in allocative efficiency in imperfectly competitive industries by reducing price-cost margins, thereby moving these industries closer to the competitive solution; however, the improvement will vary across industries depending- most critically- on the substitutability of foreign for domestically produced goods.

Another important aspect of the E-S model is the relationship between trade liberalisation and technical efficiency. The model suggests that in industries characterized by product differentiation and relative ease of entry, trade liberalisation will result in increased product specialization among domestic firms. Given the existence of product specific economies of scale, the result would presumably be a reduction in unit costs of domestic production. In industries characterized by relatively standardized production and where entry costs are not prohibitive, trade liberalisation should lead to an increase in average plant size closer to minimum optimal scale, ceteris paribus. Given the existence of plant-level economies of scale, the expected result is again a reduction in average production costs.

As noted in an earlier section, much of the available evidence in this regard is Canadian in context and generally supports the position that trade liberalisation promotes technical efficiency in oligopolistic industries. This result is consistent with studies for other countries as well.[85] However, the speed with which the resulting efficiency gains are realized, along with their magnitude, are problematic. Perhaps the most significant observation in this regard is the fact that Canada-U.S. productivity differentials in manufacturing industries persist, notwithstanding substantial bilateral tariff reductions over the past two decades, although (to be sure) non-tariff trade barriers have probably escalated over the same period. Hazledine

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84. Moreover, in some primary manufacturing industries, Canadian firms may enjoy market power in export markets. In this case, competitive adjustments may be further delayed in domestic industries.

85. See Jacquemin, op. cit.

suggests that while trade liberalisation will encourage efficiency gains, they are likely to be focused on the small segment of the manufacturing sector that currently enjoys both high tariffs and high concentration.[86]

B. Case Studies

Given the complex interactions between trade liberalisation, market structure and pricing and production behaviour, case studies of industries undergoing trade liberalisation offer a potentially fertile source of information. Since the case study methodology is not bound by restrictions associated with a need to estimate precise and reliable regression parameters, case studies have the potential to offer insights not obtainable through standard regression analysis. In fact, available case studies tend to support the statistical results summarized in the preceding section. We will summarize the findings of a number of such studies below:[87]

(i) Frederiksen:

This study examined the impact of foreign competition on U.S. markets for sheet glass, primary aluminum, portable and office typewriters and farm tractor equipment over the post-war period.[88] It found that as a result of foreign competition, price competition emerged as a basic characteristic of the markets for sheet glass, primary aluminum and portable typewriters. In these markets, buyers held little preference as to the national origin of the product, and distribution barriers to entry were relatively small for foreign companies. On the other hand, foreign competition had little opportunity to stimulate price competition in the office typewriter and farm tractor markets. The latter two products are highly differentiated, and the large, established distribution networks of American suppliers constituted an important barrier to entry. Over the sample period, U.S. suppliers established plants overseas and acquired foreign producers which already competed in the United States. The latter phenomenon further mitigated the competitive pressures of trade liberalisation.

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86. See Hazledine, op. cit., 1985.

87. We note here that no case studies of the Autopact were reviewed. This is because the Autopact represents a specialized rationalization agreement that maintained tariffs on direct imports by final consumers and established production quotas in Canada. This is not trade liberalisation in the more conventional sense identified below.

88. See Peter C. Frederikson, "Prospects of Competition From Abroad In Major Manufacturing Oligopolies", The Antitrust Bulletin, Vol. XX, No. 2, Summer 1975, pp.339-376.

(ii) Bureau of Industry Economics

This government inquiry evaluated the impact of trade liberalisation on the Australian whitegoods industry. Protective tariff rates were quite substantial in this sector. For example, the general duty rates on washing machines, large refrigerators and clothes dryers during 1971-72 were 85, 48 and 45 percent, respectively. At the same time, the industry was seen as being highly inefficient as characterized by excessive product diversification and below minimum efficient scale plants.

In 1973, a 25 percent across-the-board tariff reduction was imposed, although the policy had been announced earlier. Import competition increased substantially as a result. The market pressures which emerged in 1971 gave rise to a number of mergers and plant closures. Productivity gains were substantial with the major sources of gains being increased scale of production, technological advances and greater lengths of run for products. Observers link these productivity gains directly to increased import competition.[89]

(iii) Muller

In a comprehensive study of trade liberalisation within the EEC, Muller examines four industry sectors: automobiles, washing machines, trucks and telecommunications equipment. With respect to automobiles, he concludes that this was one of the few industries which illustrates "what was supposed to happen" in the EEC. Between 1967 and 1975, the trade in cars between the four main EEC producers trebled. National champions invaded each others' markets and subsequently lost some domestic market share. Increased integration had a significant effect on product design activities leading to a trend towards specialization. The net effect of specialization and increased market exposure was enhanced price competition and narrower profit margins.

The structural changes which accompanied increased international trade are of interest. In West Germany, Volkswagen spearheaded the expansion and substantially increased its export share of car production. BMW and Mercedes also increased their output and export shares. However, the two U.S. - owned subsidiaries did not significantly expand their output and export intensities. Muller concludes that trade liberalisation in the auto sector led to increased product specialisation and larger average firm size. He ascribes this result, in part, to the fact that the product is fairly standardized with unit cost being a critical determinant of competitiveness.

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89. See Bureau of Industry Economics, Structural Adjustments in the Australian Whitegoods Industry, Research Report Number 12, Canberra: Australian Government Publishing Service, 1983.

Washing machines and white goods in general also illustrate the benefits of trade liberalisation. Trade patterns were dominated by spectacular inroads made by Italian appliances in the West German market in the 1960s and in the U.K. in the 1970s. The Italians used a simple product design catering to lower income customers. The growth in European trade was accompanied by a tendency for product designs to become increasingly convergent in order to ensure that a design was not unacceptable to any significant portion of the market. One exception was France owing to a strong preference on the part of French purchasers for top-loading machines given the narrower dimensions demanded. French producers were thus able to maintain their dominant position in the French market, being somewhat sheltered from price competition. However, they did not export in any significant quantity either.

The German market was characterized by a strong preference for German - produced goods, which enjoy a "quality" image. Italian producers made their initial inroads into the German market by supplying bulk purchasers whose business depended on offering private label goods at competitive prices. Subsequently, German manufacturers attempted to maintain their positions at the price - competitive end of the market by buying Italian machines and selling them under their own name. The latter was an especially convenient way for Italian manufacturers to sidestep the prejudice against foreign products. In both Italy and the importing countries, there was a retirement of inefficient capacity and a rationalization of the capacity which survived. Interestingly, even in France, where "natural" and government-imposed barriers to trade provided local producers with a large measure of protection, French restructuring took place relatively quickly.

In the case of trucks, an international market emerged very slowly, even after the opening up of the EEC. Muller ascribes the delay in part to a large number of entry barriers related to national customer loyalty, the complex nature of the product and national product and safety regulations. Whereas cars are sold as predetermined packages of options, trucks tend to be more tailored to the individual customer's requirements. Thus, many smaller specialist firms continue to survive. However, some rationalization of production took place, even in the specialized sector of the industry. For example, where scale economies are important, e.g. axle production, specialist firms have come to rely on specialist producers. The importance of scale and specialisation increased with the internalization of the market in the 1970s. In particular, there was a substantial reduction in the number of firms in the sector along with an increase in the number of cooperative ventures.

The telecommunications sector, in Muller's view, provides a

contrast to the other case studies. Specifically, the quasi-integration between major domestic equipment suppliers and their major customers, national postal and telephone systems, has kept domestic markets balkanized. As a consequence, the benefits associated with a larger unified trading area have been lacking. Unfortunately, Muller provides no detailed breakdown of the experience in different product markets. For example, one would expect that the effects of trade liberalisation on the market for subscriber apparatus, e.g. basic telephones and PBX equipment, would be substantially different from the effects on markets for central office switching equipment and transmission equipment.

On the basis of his case studies, which he suggests are not necessarily representative of all sectors experiencing trade liberalisation within the EEC, Muller concludes that restructuring takes place in both exporting and importing industries, with the restructuring designed to capture more fully extant economies of scale. However, it takes a long time (5 to 15 years) before the full benefits of trade and integration are realized. A variety of factors contribute to this delay. Several are related to what might be considered non-tariff barriers, including incompatibility of standards and discriminatory commercial practices. Others are linked to "market" related factors such as a strong preference for domestic products and inertia on the part of producers.[90]

In this regard, Hocking suggests that even in the relatively competitive European car market, production responses were characterized by some inertia in the post EEC - formation period. Specifically, the major selling efforts of producers remained focused on the home market. Furthermore, specialization in each national market was largely determined by domestic demand patterns in that market.Other studies of producer responses to EEC economic integration also identify production rationalization determined by domestic demand patterns in that market.[91]

In his review of intra-Community trade patterns in the mid-1960s, Owen concludes that from the period of 1957 (the signing of the Treaty of Rome) to the mid-1960s, and for some years

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90. See Muller, op. cit. Hocking suggests that even in the relatively competitive European car market, production responses were characterized by some inertia in the post EEC-formation period. Specifically, the major selling efforts of producers remained focused on the home market. Furthermore, specialization in each national market was largely determined by domestic demand patterns in that market. See Robin Hocking, "Trade in Motor Cars Between the Major European Producers", The Economic Journal, Vol. 90, September 1980, pp.504-519.

91. See Hocking, op. cit.

after, intra-Community trade made little impact on the very high price differentials existing between Community markets.[92] In part this was due to discriminatory pricing policies adopted by manufacturers, reinforced by prohibitions on dealers which prevented them from re-exporting from the low-price to the high-price markets. Of greater probable importance were the archaic distribution systems still in operation in much of the Community in the 1960s.

Archaic distribution systems posed considerable entry barriers in terms of cost of access to a market. They also tended to weaken the link between manufacturing performance and trade. The traditional retail system is slow to pass on to the consumer any cost reductions achieved in manufacturing by rationalization and economies of scale. As a result, the manufacturer's sales are less price sensitive. In such circumstances, producers will favour exploiting cost advantages in the form of increased profit margins rather than higher volumes. In a detailed study of the auto sector, Owen further concludes that trade liberalisation was associated with plant rationalizations and single-sourcing of major engineered items.[93]

Other studies of producer responses to EEC economic integration also identify product rationalization as a ubiquitous response of producers. For example, this was a major finding in Wolf's study of the bearing industry. This latter study also concluded that customer demand for bearings with distinct national peculiarities was a factor slowing progress toward increasing international specialization within the EEC.[94]

iv) Government of Canada, Report of the Royal Commission on Farm Machinery.

With the removal of the Canadian tariff in 1944, competition between farm machinery companies took place on a North American - wide basis. Specifically, products began to be priced on a uniform basis f.o.b. the point of origin. Furthermore, all the major companies converted their Canadian manufacturing operations to a more specialized basis, producing

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92. Nicholas Owen, Economies of Scale, Competitiveness, and Trade Patterns Within the European Community, Oxford: Clarendon Press, 1983.

93. Ibid. p.81.

94. See Bernard Wolf, "The Bearing Industry: Rationalization in Europe", in Mark Casson and Associates, ed., Multinationals and World Trade, London: Allen and Unwin, Ltd, 1986, pp.175-195.

certain products for the entire North American market and, to some degree, for overseas markets as well. Prior to the removal of the tariff, many of the major companies used their Canadian plants to supply Canadian and some export markets, supplementing their Canadian production with machinery produced in the United States. Others supplied the Canadian market entirely from their American factories. Hence, an important trend for much of the post-war period involved concentrating the production of major products and components in a single plant. More recently, there has been a trend towards producing a greater variety of models.

The Royal Commission study concluded that the North American and European markets remained segmented even after the removal of the Canadian tariff. Specifically, lower price and cost levels for tractors prevailing in Britain did not spread to North America, except in the lower - horsepower ranges. The leading multinational companies continued to supply tractors to the North American market mainly from their North American production facilities. Exclusive dealing arrangements limited the scope for "grey marketers" to take advantage of price arbitrage opportunities, and producers in this concentrated sector accepted limited incursions into each others' major territories without taking strong retaliatory steps.[95]

VI. Telecommunications Subscriber Equipment: A Case Study

In an effort to develop additional evidence on the impacts of trade liberalisation, a case study of the telecommunications equipment market was undertaken to embellish upon the evidence presented in the preceding sections. The telecommunications equipment market, and in particular subscriber equipment, offers an interesting case study, since the major competitive barriers have been of a non-tariff variety. In particular, for many years, telephone subscribers were legally proscribed from owning their own telephones and other subscriber equipment. As a practical matter, this meant that the equipment attached to the telephone network was owned by the local telephone company. In the U.S. and Canada, the major telephone companies were vertically integrated into equipment manufacturing. The consequence was that market shares of subscriber equipment at the final user level were virtually identical to market shares for local telephone

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95. The latter might be seen as a manifestation of Brander and Krugman's reciprocal dumping model.

service.[96]

Over time, restrictions on subscriber ownership of equipment were progressively relaxed so that, in most North American jurisdictions, there are effectively no prohibitions against ownership by either residential or business subscribers. As a result, subscribers are free to buy equipment from any supplier, or they can continue to lease equipment from the local telephone company. The analogy here is to a sovereign government gradually eliminating a quota restricting sales of a foreign good in the domestic market. The elimination of an absolute quota against competitively produced goods offers a fertile opportunity to examine the dynamics of trade liberalisation, including the factors that condition competitive responses to trade liberalisation. Since studies of trade liberalisation have hitherto focused largely on tariff reductions, an examination of situations involving elimination of non-tariff barriers offers a somewhat different, and arguably more relevant perspective, given the prominence of non-tariff barriers in the contemporary trade environment. To be sure, the elimination of restrictions on the interconnection of subscriber equipment enhanced opportunities for domestically owned as well as foreign-owned competitors to the major integrated equipment suppliers, such as Western Electric. To this extent, the policy change is broader than the elimination of a strict import quota. Notwithstanding, since the bulk of the potential competition comprised offshore producers, the practical impact of the liberalisation is tantamount to the elimination of a non-tariff trade barrier.

A. The Changing Regulatory Environment in the United States

Up until 1956, in the United States, the local telephone companies enjoyed an uncontested monopoly in the rental of subscriber equipment. As a reflection of this condition, Bell System equipment accounted for 85% of all subscriber equipment in place at that time. Bell System equipment, in turn, was manufactured by Western Electric, the Bell System's domestic equipment manufacturing arm.

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96. See Gerald W. Brock, The Telecommunications Industry: The Dynamics of Market Structure, Cambridge: Harvard University Press, 1981, p. 235. Subscriber (or terminal) equipment encompasses equipment that terminates a telephone wire on the customer's premises. The most common forms are: 1. ordinary telephone sets; 2. key telephone sets; 3. private branch exchange sets (PBXs); 4. modems. Key telephone sets incorporate multiple incoming lines into the handset. PBXs are small local switching machines used primarily for switching calls among a closed user group. Modems convert digital pulses to analog signals and vice-versa.

The 1956 Hush - a - Phone decision was one of the earliest successful challenges to existing interconnect restrictions. In this case, the Court of Appeals for the District of Columbia Circuit ruled that telephone companies could not impose tariff restrictions that constituted an unwarranted interference with the subscribers' right reasonably to use his telephone in ways which are privately beneficial without being publicly detrimental. In February 1957, the Federal Communications Commission directed the Bell System companies to revise their published rules to remove the prohibition on connection of any device which does not injure telephone company employees or the public, or impair operation of the telephone system.[97]

A second important decision in the direction of liberalising the interconnect environment was the Carterfone ruling in 1968. In this action, the Federal Communications Commission relaxed restrictions on the use of non-carrier supplied, customer-premises terminal equipment.[98] After this decision, AT&T filed new tariffs requiring competitive equipment to be connected through a telephone company - supplied device called a data access arrangement if the customer was connecting a computer terminal to the network, and a connecting agreement if the customer was connecting a telephone system to the network. A connecting agreement was not required for telephone company-provided terminal equipment but was required for interconnect company - provided terminal equipment. The telephone company also charged a monthly fee for the leasing of a connecting agreement. Brock concludes that charges for the protective device eliminated the price incentive for independents to enter the market for residential or single-line business telephones; however, entry was feasible into PBX, key telephone systems and modems.[99] On the other hand, other observers suggest that by the early 1970s, the overall terms and conditions for interconnection were quite liberal.

In 1976-77, the Federal Communications Commission adopted its "registration program" which authorized the interconnection of terminal equipment meeting relatively minimal standards sufficient to safeguard the telephone network from technical harm. By October 1977, connecting arrangements were no longer

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97. An overview of judicial and regulatoru decisions affecting the interconnect industry is found in Communications News, A Guide to the Interconnect Market, Harcourt Brace Jovanovich Publications, 1972.

98. The Carterfone case involved a device used to interconnect private mobile radio systems with the telephone network by acoustic or inductive coupling.

99. See Brock, op. cit., p.242

required. The Agency also directed AT&T to expand reliance on unaffiliated suppliers of terminal equipment. In 1983, a further change was imparted to the regulatory environment with the divestiture of the Bell Operating Companies from AT&T and its equipment supplier - Western Electric. As a result, the local operating companies were no longer directly or indirectly involved in the manufacture of terminal equipment, although they could sell equipment through separate subsidiaries.

In summary, there was a progressive liberalisation of the competitive environment for terminal equipment in the U.S. beginning in 1956 and continuing through the early 1980s. While it is impossible to quantify the "openness" of the market at any one time, or to identify in a qualitative sense when the market became "contestable", it seems fair to conclude that by 1977, regulatory restrictions on the interconnection of terminal equipment were fairly minimal.

B. Indicators of Competitive Response

It is extremely difficult to piece together a comprehensive picture of changes in the structure, behaviour and performance of the terminal equipment industry pursuant to the liberalisation of regulatory restrictions on interconnection. One problem is that there are no comprehensive sources of data on the industry for much of the period under consideration. In the 1980s, a number of confidential consulting surveys began to be undertaken on a regular basis; however, they are proprietary to clients of the consulting firms. Another problem is that the data which are available are often inconsistent with respect to industry coverage, whether market shares of companies are measured on a stock or a flow basis, and so forth.

Notwithstanding these caveats, it is clear that new competition was slow to erode the Bell System's dominant position over the period of the 1960s and 1970s. For example, in 1969, PBX and Key Telephone System sales made by interconnect companies in Bell System territories accounted for less than one half of one percent of all sales in those territories. By 1974, this percentage had risen to 3.7. Much of the initial equipment supplied by the interconnect companies was supplied by established foreign telecommunications equipment suppliers. The Bell System equipment was manufactured by Western Electric, by and large.[100] Nevertheless, prices of PBXs and Key Telephones declined over the period, as did profit margins at AT&T. There was also a significant expansion in the range of product choice available to consumers. Brock notes that by the end of 1973, customers had a choice of 39 Key Telephone systems manufactured by 15 different companies and of 163 PBX system models available

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[100]. See Brock, op. cit. p.245

from 28 different manufacturers.[101]

Western Electric's share of the aggregate market continued to decline over the period of the 1970s. One estimate placed Western Electric's share of the total market for Key Systems and small PBXs at 67% in 1974; by 1979, it was down to 58%. For large PBXs, the 80% share of the market in 1974 had declined to 67% by 1979. For conventional telephone sets, the corresponding shares were 72% and 62%, respectively.[102] These foregoing estimates are for sales of different categories of equipment. There is no reason to believe that the share distributions would be different if they were measured in physical units, as prices were comparable across competitors.

By the 1980s, the market share of Western Electric had declined even further. For example, in 1984, AT&T accounted for around 19% of all new PBX lines shipped. In the same year, it accounted for around 26% of new Key Systems (by number of systems).[103] At the same time, it was estimated that around 75% of the terminal equipment sold in the U.S. was manufactured in foreign countries. An (unknown) share of AT&T's production was "outsourced" to foreign producers.[104]

As noted above, it is extremely difficult to piece together consistent measures of the behaviour and performance of industry participants over time. It does seem clear that the progressive liberalisation of the terminal equipment market gave rise to the "conventional" results anticipated from the E-S model. Specifically, average real (and in some cases nominal) prices of terminal equipment declined. For example, since 1983, the average price per line for PBXs has dropped around 20%. Since 1981, the average cost to end-users for key telephone systems has been reduced by more than 50%. The average price of standard telephone instruments has held flat or declined slightly over recent years despite the frequent addition of new features. In the case of specialty and "decorator" telephones, prices have steadily

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101. Ibid. p. 245

102. See A Report By the Majority Staff of the Subcommittee on Telecommunications, Consumer Protection and Finance, US House of Representatives, Washington, D.C.: U.S. Government Printing Office, November 1981.

103. See U.S. Department of Commerce, NTIA Competition Benefits Report, Washington, D.C.: U.S. Government Printing Office, November 1985.

104. Ibid.

fallen.[105]

To be sure, technological change has made an important contribution toward lowering the costs of terminal equipment and expanding the range of features that can be economically offered at any given set of prices. In particular, the falling costs and increasing power of micro chips has been a major factor enhancing the ability of telecommunications equipment suppliers to offer improved and cheaper subscriber equipment. Nevertheless, evidence suggests that increased competition played an important role in stimulating producers to offer improved equipment at lower prices. Such evidence includes observations that an increasing percentage of equipment was supplied from lower-cost offshore sources, including AT&T equipment;[106] that profit margins at Western Electric dropped significantly over time, to the point that regulators became concerned about AT&T's willingness to continue to provide certain types of subscriber equipment; and that the number of firms producing terminal equipment expanded quite substantially in the 1970s, but actually contracted somewhat during the 1980s.

The evidence from the U.S. experience is consistent with previously reviewed case studies; i.e. the impact of trade liberalisation is inexorably in the direction of lower prices, lower costs and lower price-cost margins, and in the direction of greater product choice for consumers and a faster rate of adoption of new technology, including the incorporation of new features into products. It is also the case that these competitive developments evolved over time. While significant steps towards liberalisation had taken place by 1970, the major competitive effects were felt in the late 1970s and early 1980s. In part, the lags reflected the fact that the connecting agreements required up until 1978 put competitive equipment at a significant price disadvantage compared to telephone company equipment. Interconnect companies also claimed that the local telephone companies delayed the availability of connecting arrangements.[107] After 1978, charges of predatory pricing were

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105. See Anne Cormier, editor, The Fifth Interconnect Industry Survey, Potomac, Maryland: Phillips Publishing, Inc., 1985.

106. It has been reported, for example, that between 1978 and 1984, Far East telephone shipments to the U.S.., excluding Japan, rose from about $18 million to $440 million, much of that representing very low-priced "disposable" phones. See U.S. Department of Commerce, op. cit.

107. See Joseph Fuhr, Jr., "Competition in the Terminal Equipment Market After Carterfone", The Antitrust Bulletin, Fall 1983, pp. 669-698.

raised. Also, the threat of reciprocity was identified by interconnect companies as a barrier to competition. In this case, allegations were made that telephone company purchasers were boycotting potential suppliers that used interconnect-supplied equipment and were encouraging their employees to do the same.[108] However, perhaps most significant was the consumer's familiarity with the telephone company's monthly tariff which effectively reduced the cross-price elasticity of demand between independently produced equipment and equipment produced by telephone company subsidiaries. In effect, consumers did not readily compare prices of sets sold by interconnectors to the imputed price charged by the telephone company. To this extent, consumers were not as aware as they should have been to lower prices available on interconnect equipment.

C. The Canadian Experience

The Canadian regulatory environment for terminal equipment is complicated by the fact that federal jurisdiction extends over a limited number (albeit large) telephone operating companies. Outside of the Bell Canada and B.C. Telephone regions primarily, provincial regulators establish rules for interconnection to the telephone network, and their approach to deregulation in this area has not necessarily followed the CRTC's approach.

The first substantive move toward liberalisation of interconnection restrictions in Canada came in 1969 when Bell Canada permitted the attachment of customer provided data equipment through a coupler arrangement.[109] In the early 1970s, there were federal policy considerations of the issue and a voluntary program was established to permit a lessening of restrictions. However, attempts by applicants to fully open terminal attachment were frustrated by Bell's position, supported by the CRTC, that terminal attachment rules could only be reviewed by the CRTC if Bell prescribed rules. By declining to specify rules, Bell successfully fought off several attempts to open up terminal attachment in the early and mid-1970s.

In 1977, Challenge Communications sought to overturn the restriction on terminal attachment through Section 321 of the Railway Act, as well as Section 5 of the Bell Canada Special Act. The CRTC found in Telecom Decision CRTC 77 - 16 in December 1977 that the Bell tariff prohibiting interconnection of Challenge's

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108. Ibid.

109. The following chronology of Canadian events is taken from Testimony of Donald A. Braden, Before the Newfoundland and Labrador Board of Commissioners of Public Utilities, In The Matter of the Public Utilities Act, R.S.W. 1970, c322, as amended, mimeo, November 5, 1986.

equipment contravened Section 321, as it discriminated unjustly against Challenge. Bell Canada lost an appeal of the Decision with the Federal Court, and in June 1978 the Supreme Court of Canada refused to hear Bell's further appeal.

In November 1979, Bell made an application for a full public hearing to determine if terminal attachment was in the public interest. Bell proposed interim regulations to be enforced until a final ruling was made on the merits of terminal attachment. The response from the CRTC to this request came in August 1980. In its decision, The CRTC set out alternative (to Bell) interim rules permitting terminal attachment subject to a full public hearing to be held subsequently. B.C. Telephone had instituted a practice of allowing multi-line terminal attachment subject to a special agreement which included a 50% surcharge on the line charge. The CRTC found B.C. Telephone's policy contrary to Section 321 of the Railway Act and ordered the interim requirements prescribed for Bell Canada to apply to B.C. Telephone. Bell subsequently petitioned the federal Cabinet to overrule the CRTC's decision. It also appealed to the Restrictive Trade Practices Commission claiming that the CRTC decision could lead to the domestic markets being swamped by cheaper foreign products. These latter actions were unsuccessful.[110]

The interim requirements of the 1980 decision remained in force until November 1982. After considering the evidece, which included over one year of competition under the interim rules, the CRTC found that it was in the public interest to continue with competition. The scope of the interim rules was expanded by permitting the sharing of customer owned PBXs providing that separate trunks were provided to each subscriber and permitting customer ownership of TWX and Telex terminals, subject to technical standards being published.[111] The telephone companies were permitted to sell in-place and new equipment subject to detailed reports to be filed with the regulator. Floor prices had to be filed with the CRTC for any equipment sold by the telephone company.

In the post-1982 period, the majority of provincial regulators liberalised interconnection restrictions. In addition, the federally regulated telephone companies were given greater flexibility in their tariff pricing, although they were required to establish separate subsidiaries through which terminal

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110. See Yoshiko Kurisaka, Implications of Competition in Telecommunications for Canadian Regional Economic Development: A Policy Analysis, Report Presented to the Planning Programme, Department of Geography, University of Toronto, mimeo, March 1984.

111. TWX is the telex service offered by Telecom Canada.

equipment would be sold.

This relatively extended chronology of interconnection in Canada underscores a point that emerges from the U.S. experience. Namely, the dominant supplier in a market (e.g. AT&T via Western Electric in the U.S. and Bell Canada via Northern Telecom in Canada) will seek to supplement the loss of one non-tariff barrier with another, making use of the regulatory/political process when feasible. However, it is also relevant to note that in both the U.S. and Canada, attempts to subvert the competitive process through the regulatory process were ultimately unsuccessful. Given the dominant and protected positions of the major telephone carriers, this is persuasively consistent support for our preceding conclusion that concentrated industries do not enjoy above-average success in preventing or reversing trade liberalisation measures undertaken by governments.

It might also be noted that the Canadian experience after interconnection is similar to the U.S. experience. Specifically, where interconnection was permitted, the range of product choice increased dramatically. Evidence also suggests that technology has been introduced at a more rapid rate as a result of increased competition in the marketplace. New Key Telephone Systems and PBXs are software driven with new additions, called generics, regularly introduced by the manufacturer. The interconnect companies introduced these new generics months ahead of the telephone companies.[112]

While a consistent measure of market share cannot be provided, it is evident that non-integrated equipment manufacturers were able to capture a significant share of the market in the post-interconnection period. For example, the interconnect market share in 1985 was estimated to be 26% of all Key System lines and 34% of all PBX lines in Canada.[113] To some extent, these shares may overstate the actual shares of independent equipment manufacturers, since interconnect companies in Canada also handle Northern Telecom equipment to a greater or lesser extent.

The point remains that there was a significant competitive response on the part of independent equipment manufacturers, and Bell Canada's dominant status in the equipment market gradually began to lessen. The emergence of new competitors was abetted by regulatory restrictions which prevented Bell Canada from selling subscriber equipment from 1980 to 1982.[114] As in the U.S.,

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112. See Braden, op cit, p.43

113. Ibid., p.26

114. See Kurisaki, op cit., p.18.

interconnection has been marked by vigorous price competition, and the average price per line for interconnect systems has declined dramatically since 1980.[115]

D. Summary of the Telecommunications Example

The telecommunications equipment sector was highly concentrated in the early stages of interconnection. In this respect, it was a promising candidate for the type of mutual accommodation described by Cowling. Cowling suggests that the mutual lowering of tariffs, although changing the environment in which international trade takes place, need not lead to an increase in international competition. In particular, each member of the international oligopoly will anticipate that any attempt to secure a bigger market share as a consequence of the tariff reduction will lead to an immediate response which will imply that such a move is unprofitable. As a result, the degree of monopoly in each country is sustained.[116] The experience of the telecommunications industry reviewed above, along with most other studies reviewed in earlier sections, belies Cowling's thesis, and other models which suggest that implicit collusion will obviate - or even reverse - the competitive stimulus imparted by trade liberalisation.

The terminal equipment sector of the industry does support Cowling's suggestion that, in the short term, domestic monopolists will seek the help of the state in securing protection. However, the evolution of the industry was progessively towards greater competition rather than towards a restoration of a more stable, collusive arrangement. To be sure, the established position of the telephone companies effectively reduced the elasticity of substitution between competitively produced equipment and equipment produced by the vertically integrated suppliers. Nevertheless, all of the conventionally anticipated consequences of trade liberalisation emerged from the interconnect experience including lower prices, lower price-cost

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115. As an illustration, in the early 1970s, the carriers' rentals for modems, including conditioning, were $175.00 a month for a 2400 bits per second modem and over $600 a month for a 9600 bits per second modem. By the mid-1980s, these rentals were as low as $57 and $200 per month respectively. While declining costs are one possible explanation, it has also been argued that these reductions in rental rates are the result of competition between the carriers, as well as between the manufacturers who actively market their modems directly to users. See CBEMA Submission to the CRTC in the Matter of Interconnection, Toronto, mimeo, undated, p.17.

116. Keith Cowling, Monopoly Capitalism, London and Basingstoke: MacMillan Press, 1982, p.131

margins, greater efforts on the part of established producers to lower costs, increased product variety and a more rapid adoption of new technology.

The British experience with liberalisation also supports the foregoing basic conclusions. Briefly, the Telecommunications Act of 1981 greatly eased previously restrictive conditions governing the attachment of customers' equipment to the public network. Customer premises equipment before liberalisation was basic, showed little variety and employed relatively stable technology. This lack of product variety and slow rate of product innovation allegedly arose because the Post Office decided on what could be used in the British market and did not favour diversity. By 1985, in contrast, more than 100 different types of telephones could be purchased by end users.[117]

While market share data at the retail level are available, they are apparently not readily available at the manufacturing end. Fragmentary evidence suggests that liberalisation restructured the U.K. market but not as dramatically as in the United States. The big manufacturers remain, but new firms have entered and imports have claimed a larger share of the market, rising from 8% in 1981 to 15% in 1985. The majority of manufacturing entrants have been foreign firms.

Notwithstanding various competitive restrictions imposed by British Telecom, the monopoly carrier, of the type mentioned in the discussion of the Canadian liberalisation experience, direct and indirect evidence suggests that British manufacturers are attempting to improve their efficiency and innovativeness. For example, nominal expenditures on PBX R & D almost doubled between 1982 and 1984. Observers credit at least a portion of this increase to intensified competition.[118]

The central office switching equipment sector in the U.S. has recently experienced a comparable reduction in non-tariff barriers with the 1984 divestiture of the Bell Operating Companies from AT&T. The local operating companies now enjoy much greater freedom to purchase network switching equipment from lower cost suppliers than they did previously. While we did not study this sector in detail, it appears that foreign suppliers are making strong competitive efforts to penetrate the U.S. market and are starting to experience some success in making sales to Bell Operating Companies. To be sure, most developed

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117. See James Foreman - Peck and Dorothy Manning, "Liberalization As An INdustrial Policy: The Case of Telecommunications Manufacturing", National Westminister Bank Quarterly Review, November 1986, p. 22.

118. Ibid., pp. 29 - 30.

countries still protect the local monopoly of the telephone company's equipment supplier insofar as network switching equipment is concerned. To this extent, bilateral trade liberalisation has been quite muted in the central office switching sector, and it is the response to bilateral trade liberalisation that is the immediate focus of Cowling's analysis. With progressive steps being taken to liberalise markets in Japan and Europe, the central office switching equipment sector should constitute an excellent additional case for future study.

VII SUMMARY AND POLICY CONCLUSIONS

The available literature defies easy summarization. In particular, the heterogeneous collection of studies reviewed does not usually consider all of the hypotheses that, in theory, would be interesting and relevant to examine in the context of trade liberalisation and imperfect competition. Indeed, most of the relevant studies focus on a fairly narrow set of behavioural relationships, either implicitly or explicitly in a partial equilibrium context. Nevertheless, taken as a whole, the empirical evidence tends to provide overall support for a number of theoretical propositions related to the E-S model.

Perhaps most importantly, competitive pressures associated with trade liberalisation contribute to a more efficient allocation of resources in the domestic economy. The resulting efficiency gains are of both an allocative and technical nature. That is, lower import prices (in imperfectly competitive industries) encourage both a reduction in the domestic "welfare triangle" loss and a reduction in the average costs of production through production rationalization and increased product specialization. This appears to be true even in industries that are partially shielded from import competition through non-tariff barriers erected to slow down the inflow of foreign products into the domestic market.[119] In "workably competitive" industries, there is generally some exodus of inefficient producers from the domestic industry.

There is virtually no evidence supporting the empirical relevance of models that identify the potential for trade liberalisation to encourage oligopolistic coordination and reduced price competition. At the same time, however, the evidence suggests that convergence of prices and costs across markets can be a relatively slow and problematic process.

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[119]. For additional evidence on this latter point, see Glen Jenkins and Gary Sawchuk, "Protection, Competition and Adjustment: The Television Industry in Canada", Harvard University, mimeo, March 1986. To be sure, there are several exceptions to this statement. The most notable oligopolistic exception in this regard is the steel industry.

Specific structural characteristics condition the speed at which adjustments to trade liberalisation anticipated by the E-S model take place. Since these characteristics differ across markets, the dynamic profile of these adjustments will also vary across markets.

The substitutability between foreign and domestic goods is one important factor conditioning the adjustment process to trade liberalisation. Clearly, assuming that a law-of-one-price will hold in the post-trade liberalisation environment is inappropriate in almost all relevant cases; however, the degree of substitutability will vary across industries according to a number of factors including government imposed barriers such as product standards and restrictions on open-market purchasing associated with local purchasing preferences. An implication is that calibration of econometric trade models designed tc evaluate the effects of trade liberalisation should acknowledge the possibility that price elasticity parameters vary significantly across industries.

Foreign ownership is another structural factor conditioning the speed (if not the direction) of adjustments to trade liberalisation. The microeconomic theory of the MNE is not very well developed in this area; however, empirical studies point to a number of conclusions. One is that the presence of MNEs in a domestic economy can actually facilitate production rationalization. That is, the substitution of internal for external markets can hasten the process by which lower cost sources of output are substituted for higher cost sources, as well as the process by which production is concentrated in specific economic units. However, there is some evidence that the responsiveness of domestic prices to trade liberalisation may be reduced by the widespread presence of MNEs in the domestic economy. To the extent that this latter phenomenon reflects market power of MNEs, it is presumably unrelated to foreign ownership, per se. However, there may be incentives in the transfer pricing environment that are unique considerations for the MNE. In this case, public policy initiatives in the transfer pricing area might facilitate domestic price adjustments to freer trade.

The relationship between trade liberalisation and concentration in domestic industries may be somewhat more complex than suggested by the E-S model. Specifically, allocative and technical efficiency gains associated with trade liberalisation increase with the degree of industrial concentration; however, this relationship may not be monotonic. That is, beyond some critical threshold, oligopolists may choose to cede market share and maximize extant quasi-rents rather than undertake competitive responses to increased lower-priced imports. In effect, the short-run preservation of quasi-rents on infra-marginal sales may represent the long-run optimizing strategy of firms that account

for a dominant share of industry demand. Clearly, this issue interacts with the substitutability between foreign and domestically produced goods. That is, the greater the substitutability, the less profitable will be a strategy of short-run rent preservation, ceteris paribus. Notwithstanding this possibility, it is difficult to identify examples of this type of behaviour in the empirical literature. The evidence from a wide assortment of cases tends to support Baldwin and Gorecki's finding for the Canadian economy; namely, higher import penetration is associated with greater efficiency in domestic industries.[120]

A major gap in the available literature is that it does not clearly and explicitly address the interactions between cross-price elasticities of demand, ownership concentration and the presence of MNEs. While, in principle, all can exert a conditioning effect on the trade liberalisation adjustment process, the "separability" of their contributions has not been clearly identified either in available theoretical or empirical studies. In a similar vein, the impact of increased export competition on domestic pricing behaviour and on the technical efficiency of domestic firms is a relatively unstudied phenomenon. On balance, the conventional wisdom that increased exports lead to lower domestic prices, costs and price-cost margins is supported by the available evidence; however, there is also evidence that this response can be characterized by long and variable lags across industries. Presumably the same conditioning factors are involved on the export-side as on the import-side. However, the evidence in the former case is even more limited than in the latter case.

A relative dearth of empirical evidence exists for several other substantive issues related to trade liberalisation. For example, conventional models of trade suggest that economic integration will lead to increased product specialisation within countries but that the overall range and variety of products available to consumers will expand. While the available evidence, on balance, tends to support both assertions, very few studies

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120. See John Baldwin and Paul Gorecki, "The Relationship Between Trade and Tariff Patterns and the Efficiency of the Canadian Manufacturing Sector in the 1970s: A Summary", in John Whalley with Roderick Hill, eds., Canada - United States Free Trade, Totonto: University of Toronto Press, pp. 179 - 192. This finding also belies concerns that unilateral tariff reductions in imperfectly competitive industries characterized by economies of scale may be welfare reducing. The concern here is that increased imports will lead to higher unit costs in domestic industries owing to a contraction in production; however, the entire cost function could well shift downward which would seem to be the general result identified in the empirical literature.

attempt to identify the nature of product differentiation pre and post- trade liberalisation. Another relationship for which very little empirical evidence exists is that between trade liberalisation and the diffusion of technology. What limited evidence exists suggests that import competition promotes the more rapid adoption of new production techniques.[121] However, more research is clearly needed in this area.

In terms of their policy implications, existing studies, taken as a whole, offer no strong basis to overturn the conventional welfare arguments for trade liberalisation; however, they do offer a basis for anticipating that the magnitude and timing of the effects will vary across industries. Furthermore, they suggest that the benefits of international economic integration will be enhanced by policy measures designed to reduce rigidities within the domestic economy. For example, formal and informal local purchasing requirements will obviously mitigate the efficiency incentives created by trade liberalisation. Less obviously, formal specialisation and export sharing agreements may weaken or even offset the potential competitive effects of increased exporting opportunities. Restricted access on the part of independent producers to "downstream" selling agents, say through exclusive dealing arrangements and other formal and informal vertical restrictions, can also substantially blunt the competitive pressures of poised imports. Finally, a policy of open tolerance- or even encouragement- of mergers and acquisitions among large firms could dampen the efficiency benefits of trade liberalisation to the extent that (beyond some critical threshold) non-cooperative oligopolists will emphasize a strategy of short-run rent preservation.

Several directions for future research are suggested. One is the relationship between export competition and the behaviour of oligopolists in the domestic market. More can and should be known about this relationship. Another is the interrelationships between product differentiation, foreign ownership and concentration. For policy purposes, it is relevant to establish whether these various market structure characteristics are separable and, if so, which exert a dominant conditioning influence on the behaviour of domestic firms. A third suggestion is to focus more explicit attention on the causes of imperfect substitution between foreign and domestically produced goods. To the extent that the causes are associated with government policy, an effective trade policy should be integrated with domestic competition policy. Finally, studies could adopt a longer time

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121. See Steven Globerman, "Technological Diffusion in the Canadian Carpet Industry", Research Policy, Spring 1975, pp.190-206. The experience of the terminal equipment sector described above also provides relevant supporting evidence.

horizon in order to identify some of the more subtle impacts of trade liberalisation, including the heterogeneity of output available to domestic consumers and the speed of new technology adoption.

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